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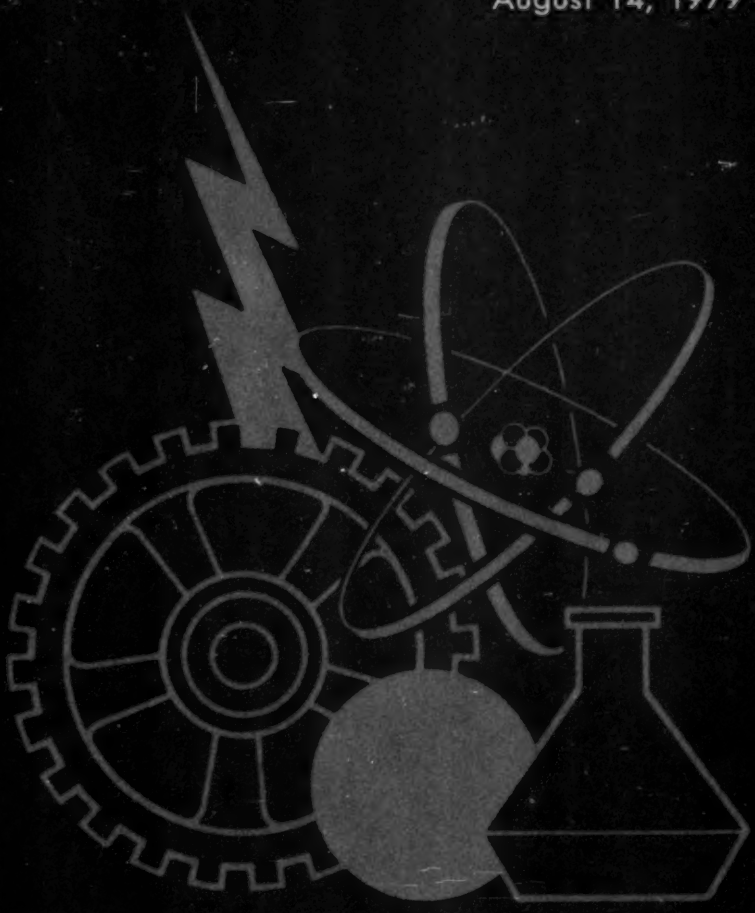
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 14, 1979



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August 14, 1979 Volume 985 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT, including the amounts of the fees thereunder and the States that may be designated in international applications, consult the notice entitled "Update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 3, 1979.

Effective August 1, 1979 the international fees are increased to the following amounts:

Basic fee under PCT Rule 15.1(i) for an international application containing 30 sheets or less	**$190.00**
Supplemental fee to the Basic fee for each page of an international application in excess of 30 sheets	**3.50**
Designation fee under PCT Rule 15.1(ii)	**45.00**

July 3, 1979.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

3,236,679, Ransburg Electro-Coating Corp., ELECTROSTATIC SPRAYING, **filed** June 8, 1979, D.C., N.D. Ohio (Cleveland) Doc. C79–1170, *HSC Corporation* v. *American Chemical Products Co.*

3,492,748, Armand D. Swenson, PISTOL SAFETY MECHANISM ADAPTED FOR RIGHT OR LEFT HAND OPERATION, **filed** May 25, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1925–RMT (Px), *Armand D. Swenson* v. *M Bar S Safari Outfitters, Inc. et al.* Temporary restraining order issued May 25 ,1979 and set for hearing on June 4, 1979.

3,644,764, Mesur-Matic Electronics Corp., HARMONIC DRIVE FOR DIGITAL STEP MOTOR, **filed** June 16, 1978, D.C., M.D. Pa. (Scranton), Doc. C–78–573, *Mesur-Matic Electronics Corp.* v. *Mergenthaler Linotype Company, Inc.* Order of court accepting settlement agreement, and dismissing action filed on May 25, 1979.

3,661,144, Jensen and Jensen, SUCTION APPARATUS FOR BODY CAVITIES, **filed** June 6, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2253, *A/S Ferrosan* v. *Miles Products, Inc. et al.*

3,692,208, Dart Industries, Inc., CLOSURE FOR OPEN-MOUTHED CONTAINERS FOR TUBULAR VESSELS; **3,756,480,** same, THREE-PART PRESS TYPE SEAL; **D. 236,576,** same, CONTAINER CLOSURE OR THE LIKE, **filed** Apr. 17, 1979, D.C., E.D. Wis. (Milwaukee), Doc. 79–260, *Dart Industries, Inc.* v. *Henriksen Imports, Inc. et al.*

3,752,228, Escoa Fintube Corporation, I-TYPE SEGMENTED FINNED TUBE; **3,764,774,** same, I-TYPE SEGMENTED FINNED TUBE AND ITS METHOD OF MANUFACTURE, **filed** Nov. 11, 1976, D.C., N.D. Okla. (Tulsa), Doc. 76–C–572, *Escoa Fintube Corporation* v. *Tranter, Inc.* Judgment entered in favor of defendant on Apr. 6, 1979.

3,756,480. (See 3,092,208.)

3,764,774. (See 3,752,228.)

3,786,734, Martin H. Long, UNDERWATER ELECTRONIC FLASH ACTUATOR, **filed** Apr. 10, 1979, D.C., N.D. Calif. (San Francisco), Doc. C79–0824 LHB, *Martin Long* v. *O. H. Brigham.* Order to remand to Superior Court of California granted on June 15, 1979.

3,841,701, Vecta Group, Inc., CONNECTABLE LOUNGE CHAIRS, **filed** June 14, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2459, *Vecta Contract Inc.* v. *Cartwright Corp.*

3,860,003, The Procter & Gamble Company, CONTRACTABLE SIDE PORTIONS FOR DISPOSABLE DIAPER; **4,081,301,** same, METHOD AND APPARATUS FOR CONTINUOUSLY ATTACHING DISCRETE, STRETCHED ELASTIC STRANDS TO PREDETERMINED ISOLATED PORTIONS OF DISPOSABLE ABSORBENT PRODUCTS, **filed** June 19, 1979, D.C. Del. (Wilmington), Doc. 79–287, *The Procter & Gamble Company* v. *Riegel Textile Corporation.*

3,868,790, Roy A. Fricke, SPARK PLUG CLEANER; **4,028,851,** same; **4,062,155,** same, **filed** July 13, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–C–436, *Wells Mfg. Corp.* v. *Roy A. Fricke and Elco International Limited.*

3,885,552, Pacemaker Diagnostic Clinic of America, Inc., FUNCTION MONITORING SYSTEM AND METHOD FOR USE IN ASSOCIATION WITH CARDIAC PACER APPARATUS, **filed** June 5, 1979, D.C. Oreg. (Portland), Doc. C–79–601, *Pacemaker Diagnostic Clinic of America, Inc.* v. *Instromedix, Inc.*

3,890,451, Julius L. Kessler, PROCESS OF MAKING A BACON-LIKE MEAT PRODUCT OF REDUCED FAT CONTENT; **4,057,650,** same, BACON-LIKE MEAT PRODUCT OF REDUCED FAT CONTENT, **filed** June 5, 1979, D.C.N.J. (Newark), Doc. C–79–1678, *Julius L. Kessler* v. *Swift & Co. et al.*

3,920,352, Speck-Pumpen Daniel Speck & Soehne, PUMP WITH PLASTIC HOUSING, **filed** Mar. 12, 1979, D.C., E.D.N.Y. (Brooklyn), Doc. 79C650, *Speck-Pumpen Daniel Speck & Soehne* v. *Lomart Industries, Inc.*

3,937,882, The Vadic Corporation, FULL-DUPLEX COMMUNICATION SYSTEM ON A TWO WIRE LINE, **filed** Apr. 27, 1979, D.C., N.D. Calif. (San Francisco), Doc. C79–1021 WHO, *Western Electric Company, Inc. et al.* v. *Racal-Vadic, Inc.*

3,994,097, Ralph W. Lamb, ABRASIVE OR SAND BLAST APPARATUS AND METHOD, **filed** June 5, 1979, D.C. Oreg. (Portland), Doc. 79–600, *Ralph W. Lamb* v. *Mark K. Hagg et al.*

4,028,851. (See 3,868,790.)

4,034,099, The Upjohn Company, COMPOSITIONS AND METHOD FOR TREATING MASTITIS IN MILK ANIMALS, **filed** May 30, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2206, *The Upjohn Company* v. *Beecham Inc. et al.*

4,055,029, Collo GmbH, CLEANING, SCOURING AND/OR POLISHING PADS; **4,111,666,** same, METHOD OF MAKING CLEANING, SCOURING AND/OR POLISHING PADS AND THE IMPROVED PADS PRODUCED THEREBY, **filed** Apr. 26, 1979, D.C., E.D. Wis. (Milwaukee), Doc. 79–286, *Fedco Foam International, Inc.* v. *S. C. Johnson & Son, Inc.*

4,057,650. (See 3,890,451.)

4,062,155. (See 3,868,790.)

4,081,301. (See 3,860,003.)

4,109,224, American Antenna Corporation, PRECISION INJECTION-MOLDED COIL FORM AND METHOD AND APPARATUS FOR MANUFACTURE, **filed** June 1, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2246, *American Antenna Corporation* v. *Ava Incorporated et al.*

4,111,481, Edwin Lee Nix and Bobby E. Davenport, TRUCK BED LINER, **filed** Jan. 25, 1979, D.C., S.D. Tex. (Houston), Doc C.A. H–79–175, *Plastics Unlimited, Inc., Edwin Lee Nix and Bobby E. Davenport* v. *Fred Davis, doing business as Davis Distributors.* Defendant permanently enjoined from infringing plaintiff's patent. Filed June 15, 1979.

4,111,666. (See 4,055,029.)

4,117,827, Preway, Inc., FIREPLACE CONSTRUCTION, **filed** May 4, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c1817, *Preway, Inc.* v. *The Edward George Company et al.*

4,150,253, Inter-Technology Exchange, Ltd., SIGNAL DISTORTION CIRCUIT AND METHOD OF USE, **filed** May 4, 1979, D.C., E.D. Mich. (Detroit), Doc. 79–71429, *Inter-Technology Exchange, Ltd.* v. *EXR Corp. et al.*

D. 226,576. (See 3,692,208.)

D. 240,084, Hydro-Spa, Inc. BATHING POOL; **D. 245,541,** same, **filed** Apr. 12, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1366–AAH (Tx), *Hydro-Spa, Inc.* v. *Glas-Com, Inc. and William D. Gutierres.*

D. 245,541. (See D. 240,084.)

D. 245,542. (See D. 240,084.)

D. 247,419, David L. Mick, FIREPLACE GRATE, **filed** Dec. 21, 1978, D.C., M.D. Tenn. (Nashville), Doc. 78–3567–NA–CV, *Mick Mechanisms, Inc. et al.* v. *Sears, Roebuck, & Co.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,894,310, Re. S.N. 042,402, Filed May 25, 1979, Cl. 16/47, TWIN-WHEELED CASTOR, Stafford Thomas Screen, Owner of Record: *British Castors Limited, West Bromwich, England,* Attorney or Agent: Abraham Friedman, et al., Ex. Gp.: 353

4,035,197, Re. S.N. 033,615, Filed Apr. 26, 1979, Cl. 136/89 CD, CDTE BARRIER TYPE PHOTOVOLTAIC CELLS WITH ENHANCED OPEN-CIRCUIT VOLTAGE, AND PROCESS OF MANUFACTURE, Pranab K. Raychaudhuri, Owner of Record: *Eastman Kodak Company, Rochester, N.Y.,* Attorney or Agent: Dana M. Schmidt, et al., Ex. Gp.: 114

4,068,036, Re. S.N. 039,748, Filed May 16, 1979, Cl. 428/296, FIBROUS PRODUCT, Harold Peter Stanistreet, Owner of Record: *AGFA Gevaert, Mortsel, Belgium,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 164

4,080,335, Re. S.N. 038,737, Filed May 14, 1979, Cl. 260/345.2, ANOREXIC CHROMANS, Derek V. Gardner, Owner of Record: *Beecham Group Limited, Brentford, Middlesex, England,* Attorney or Agent: Alberk L. Jacobs, et al., Ex. Gp.: 126

4,118,071, Re. S.N. 034,420, Filed Apr. 30, 1979, Cl. 299/2, IN SITU OIL SHALE RETORT WITH A HORIZONTAL SILL PILLAR, Ned M. Hutchins, Owner of Record: *Occidental Oil Shale, Inc., Grand Junction, Colo.,* Attorney or Agent: Robert I. Parker, et al., Ex. Gp.: 354

4,130,999, Re. S.N. 037,776, Filed May 7, 1979, Cl. 66/145 R, YARN BINDER APPARATUS, Roger L. Whittaker, et al., Owner of Record: *Hanes Corporation, Winston-Salem, N.C.,* Attorney or Agent: Charles Y. Lackey, Ex. Gp.: 353

4,142,552, Re. S.N. 042,365, Filed May 25, 1979, Cl. 137/446, MAXIMUM LIQUID LEVEL CONTROL VALVE, Harley D. Brown, et al., Owner of Record: *Inventor,* Attorney or Agent: Harold R. Woodard, et al., Ex. Gp.: 341

PATENT NOTICES

Certificates of Correction for the Week of Aug. 14, 1979

Re. 29,707	4,124,555	4,142,045	4,149,954
4,040,755	4,126,154	4,144,082	4,150,295
4,066,583	4,126,898	4,144,109	4,150,724
4,071,512	4,129,734	4,144,389	4,150,923
4,079,410	4,130,099	4,144,635	4,151,079
4,081,336	4,131,553	4,144,735	4,151,716
4,092,750	4,133,430	4,144,926	4,152,078
4,094,751	4,133,596	4,145,164	4,152,406
4,094,865	4,134,705	4,145,556	4,152,438
4,097,636	4,134,983	4,146,338	4,152,588
4,097,797	4,137,361	4,146,552	4,152,735
4,102,858	4,137,881	4,146,844	4,152,761
4,105,821	4,138,709	4,146,900	4,152,974
4,110,099	4,138,928	4,146,905	4,153,816
4,111,963	4,140,183	4,147,007	4,153,862
4,112,421	4,140,297	4,147,333	4,153,933
4,114,870	4,141,149	4,147,371	4,154,487
4,118,565	4,141,237	4,147,558	4,154,636
4,118,843	4,141,317	4,148,639	4,155,978
4,122,370	4,141,990	4,148,772	4,156,469

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20250

Patent application 749,093. Undecapeptide and Tumour Assay. Filed Dec. 9, 1976.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent 4,107,266. Production of Pure Alumina From Iron Contaminated Sulfate Liquors. Filed July 22, 1977. Patented Aug. 15, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent 4,115,390. Method for the Preparation of 1-Alkyl Pyridinium Chlorides. Filed Aug. 19, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,117,207. Molybdenum Chloride-Tetrachloraluminate Thermal Battery. Filed Oct. 14, 1977. Patented Sept. 26, 1978. Not available NTIS.

Patent 4,131,461. Method and Apparatus for Use in the Extrusion of Billets. Filed June 21, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,131,625. 4,4 Feet Bis(3-Ethynylphenoxy)Diphenylsulfone. Filed Jan. 19, 1978. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,131,748. p-Terphenylene-Dicarboxylic Acids and Their Synthesis. Filed June 29, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,131,792. Fabry-Perot Diplexer. Filed Jan. 24, 1978. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,131,852. Single Dispersive Delay Line Compressive Receiver. Filed Sept. 28, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,132,660. Grease Compositions. Filed Mar. 1, 1978. Patented Jan. 2, 1979. Not available NTIS.

Patent 4,135,548. Liquid Nitrogen Level Controller. Filed Aug. 11, 1977. Patented Jan. 23, 1979. Not available NTIS.

Patent 4,136,234. Charge Sensing Electrode for a Primary Battery. Filed Apr. 17, 1978. Patented Jan. 23, 1979. Not available NTIS.

Patent 4,137,370. Titanium and Titanium Alloys Ion Plated With Noble Metals and Their Alloys. Filed Aug. 16, 1977. Patented Jan. 30, 1979. Not available NTIS.

Patent 4,137,374. Method for State of Charge of Primary Battery. Filed May 2, 1978. Patented Jan. 30, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Service Division, Federal Bldg., Agricultural Research Service
Hyattsville, Md. 20782

Patent application 945,976. Inhibition of Lysinoalanine Formation by Lysine Acylation. Filed Sept. 26, 1978.

Patent 4,134,863. Highly Absorbent Graft Copolymers of Polyhydroxy Polymers, Acrylonitrile, and Acrylic Comonomers. Filed Dec. 6, 1976. Patented Jan. 16, 1979. Not available NTIS.

Patent 4,136,131. Extraction of Rubber or Rubberlike Substances From Fibrous Plant Materials. Filed Mar. 31, 1978. Patented Jan. 23, 1979. Not available NTIS.

Patent 4,136,509. Apparatus for Harvesting Vegetable Heads. Filed Apr. 20, 1977. Patented Jan. 30, 1979. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 822,971. Magnetohydrodynamic Generator Electrode. Filed Aug. 8, 1977.

Patent application 825,518. Distributed Electrical Leads for Thermionic Converter. Filed Aug. 17, 1977.

Patent application 847,996. Method for Producing Hydrocarbon Fuels From Heavy Polynuclear Hydrocarbons by Use of Molten Metal Halide Catalyst. Filed Nov. 2, 1977.

Patent application 850,335. Method for Recovering Amorphous Silica From Geothermal Solutions. Filed Nov. 10, 1977.

Patent 4,088,561. Apparatus for Electrophoresis Separation. Filed June 27, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4,089,809. Regenerable Sorbent and Method for Removing Hydrogen Sulfide From Hot Gaseous Mixtures. Filed Mar. 1, 1976. Patented May 16, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent application 958,578. Extensible Brattice and Cantilevered Roof Mounted Support System Therefor. Filed Nov. 7, 1978.

Patent application 958,594. Link-Loc Chainless Haulage System. Filed Nov. 7, 1978.

Patent application 968,046. Automated Feed and Rotational Speed Control System of a Hydraulic Motor Operated Drill. Filed Dec. 8, 1978.

Patent 3,980,081. Self-Rescue Breathing Apparatus. Filed June 25, 1975. Patented Sept. 14, 1976. Not available NTIS.

Patent 4,090,399. Load Measuring Gage. Filed July 31, 1974. Patented May 23, 1978. Not available NTIS.

Patent 4,090,736. Detachable Cab Construction for Mining Machines. Filed Feb. 24, 1977. Patented May 23, 1978. Not available NTIS.

Patent 4,098,956. Spectrally Selective Solar Absorbers. Filed Aug. 11, 1976. Patented July 4, 1978. Not available NTIS.

Patent 4,100,068. System for the Dielectrophoretic Separation of Particulate and Granular Material. Filed Jan. 13, 1977. Patented July 11, 1978. Not available NTIS.

Patent 4,110,107. Process for Reducing Molten Furnace Slags by Carbon Injection. Filed Nov. 7, 1977. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,113,314. Well Perforating Method for Solution Well Mining. Filed June 24, 1977. Patented Sept. 12, 1978. Not available NTIS.

Patent 4,128,133. Torquer/Thruster for Flexible Roofdrill. Filed May 7, 1976. Patented Dec. 5, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6,003,696. Device for Producing Extended Elongated Plasmas for X-Ray Lasers. Filed Jan. 1, 1979.

Patent application 945,984. Modular Containerized Firefighting System With Remote Standoff Capability. Filed Sept. 27, 1978.

Patent application 965,811. Method of LED Manufacture. Filed Dec. 4, 1978.

Patent application 966,674. Method for the Production of Hexanitrostilbene (HNS). Filed Dec. 5, 1978.

Patent 4,124,408. Method of Removing Deposits on Refrigeration System Surfaces. Filed June 2, 1977. Patented Nov. 7, 1978. Not available NTIS.

Patent 4,128,301. Optical Waveguide Power Divider. Filed Mar. 29, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,131,392. Deployable Rotor. Filed Jan. 31, 1977. Patented Dec. 26, 1978. Not available NTIS.

TENNESSEE VALLEY AUTHORITY
Division of Law, Muscle Shoals, Ala. 35660

Patent 4,134,750. Granular Ammonium Phosphate Sulfate and Urea-Ammonium Phosphate Sulfate Using a Common Pipe-Cross Reactor. Filed Dec. 19, 1977. Patented Jan. 16, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent 4,116,368. Clog-Free Inorganic Grout Emplacement Gun. Filed Dec. 16, 1976. Patented Sept. 26, 1978. Not available NTIS.

Patent 4,121,154. Alternating Current Potential Measuring Device. Filed Dec. 10, 1976. Patented Oct. 17, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 8,211. Double-Beam Optical Method and Apparatus for Measuring Thermal Diffusivity and Other Molecular Dynamic Processes in Utilizing the Transient Thermal Lens Effect. Filed Jan. 31, 1979.

Patent application 8,212. Method of Mitigating Titanium Impurities Effects in p-Type Silicon Material for Solar Cells. Filed Jan. 31, 1979.

Patent application 969,757. Method and Technique for Installing Light-Weight Fragile, High-Temperature Fiber Insulation. Filed Dec. 15, 1978.

Patent 4,133,697. Solar Array Strip and a Method for Forming the Same. Filed June 24, 1977. Patented Jan. 9, 1979. Not available NTIS.

Patent 4,133,941. Formulated Plastic Separators for Soluble Electrode Cells. Filed Mar. 10, 1977. Patented Jan. 9, 1979. Not available NTIS.

Patent 4,134,447. Thermal Compensator for Closed-Cycle Helium Refrigerator. Filed Sept. 30, 1977. Patented Jan. 16, 1979. Not available NTIS.

Patent 4,134,744. Fine Particulate Capture Device. Filed Nov. 8, 1973. Patented Jan. 16, 1979. Not available NTIS.

Patent 4,134,786. Process for Purification of Waste Water Produced by a Kraft Process Pulp and Paper Mill. Filed Dec. 15, 1976. Patented Jan. 16, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent application 950,761. Backwashing Reverse-Osmosis and Ultrafiltration Membrane. Filed Oct. 12, 1978.

Patent application 950,762. Method of and Apparatus for Detecting Escaping Leach Solution. Filed Oct. 12, 1978.

Patent 4,079,592. Method of and Apparatus for Feeding and Inserting Bolts in a Mine Roof. Filed Mar. 4, 1977. Patented Mar. 21, 1978. Not available NTIS.

Patent 4,079,809. Muffler for Pneumatic Drill. Filed July 13, 1977. Patented Mar. 21, 1978. Not available NTIS.

Patent 4,085,017. Recovery of Copper and Nickel From Alloys. Filed Sept. 6, 1977. Patented Apr. 18, 1978. Not available NTIS.

Patent 4,133,967. Two-Stage Electric Arc-Electroslag Process and Apparatus for Continuous Steelmaking. Filed June 24, 1977. Patented Jan. 9, 1979. Not available NTIS.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 21, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-11-78
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines: Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-2-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, Treating Processes, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-6-78
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-20-78
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-1-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear and Reactors; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptograph; Laser Devices; Radioactive Materials; Power Metallurgy, Rocket Fuels.	2-3-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-1-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-25-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-22-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-11-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-7-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-30-78
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	12-20-77

Expiration of patents: The patents within the range of numbers indicated below expire during April 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,027,558 to 3,031,668, inclusive
Plant Patents..... Numbers 2,135 to 2,142, inclusive

PATENT EXAMINING CORPS

CONDITION OF PATENT APPLICATIONS AS OF

PATENT EXAMINING GROUPS

CHEMICAL EXAMINING GROUPS

MECHANICAL EXAMINING GROUPS

ELECTRICAL EXAMINING GROUPS

REISSUES

AUGUST 14, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,070

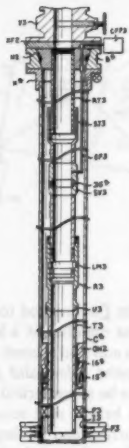
APPARATUS FOR TREATING WELLS

Phillip S. Sizer, Dallas, and Carter R. Young, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Original No. 3,848,668, dated Nov. 19, 1974, Ser. No. 210,727, Dec. 22, 1971. Application for reissue Oct. 26, 1976, Ser. No. 735,584

Int. Cl.[2] E21B *23/00*

U.S. Cl. 166—72 **19 Claims**



1. Apparatus for treating a well having one or more flow conductors therein to install a surface controlled subsurface safety valve in each such flow conductor of the well for controlling flow from the well therethrough which includes: guide and support means insertable through each well flow conductor to engage the flow conductor at a point below which it is desired to part said conductor for removal of the upper portion of said conductor thereabove leaving the lower portion of the conductor in place in the well; means for parting the upper portion of each original flow conductor from the remainder thereof left in place in the well at the selected point in the flow conductor for removal of the upper portion of the flow conductor from the well while leaving the lower portion engaged with and supported by the guide support means; means including replacement flow conductor means for each separate flow conductor of the well having surface controlled safety valve means therein insertable into the well telescoped over the guide and support means into engagement with the upper end of the lower portion of the flow conductor left in place in the well and having connecting means for connecting said replacement flow conductor means with the upper end of the original flow conductor left in the well engaged with and supported by the guide and support means over which said replacement flow conductor means is telescoped, said guide and support means being removable from within the replacement flow conductor means after said replacement flow conductor means has been connected to the upper end of said original low conductor left in place in the well for removal of said guide and support means from the well; and control means at the surface connected to each of the subsurface safety valve means and operative in response to predetermined conditions sensed in the well or at the surface for actuating each of said safety valve means to cause the same to move to closed position upon the occurrence of such predetermined sensed conditions, whereby wells may be provided with surface controlled subsurface safety valve apparatus without disturbing the flow conductors below the point of parting and removing the upper portion thereof and without disturbing the remainder of the flow conductor and well apparatus left in place in the well therebelow.

Re. 30,071

DRILL STRING ELEMENT HANDLING APPARATUS

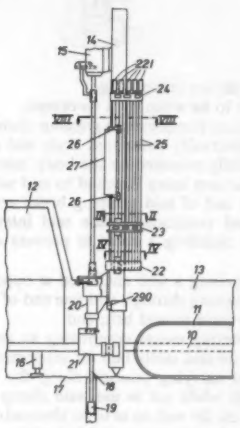
Jonas O. A. Hilding, and Jan E. Persson, both of Nacka, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Original No. 3,986,569, dated Oct. 19, 1976, Ser. No. 533,134, Dec. 16, 1974. Application for reissue Jun. 24, 1977, Ser. No. 809,708

Claims priority, application Sweden, Dec. 21, 1973, 7317338

Int. Cl.[2] E21B *19/14*

U.S. Cl. 175—52 **22 Claims**



21. An arrangement in drill rigs for connecting and disconnecting drill string elements movable to an fro between a drill string element magazine and a drill string axis, comprising an elongate support, a drilling machine (15) mounted to said support for reciprocal movement along said support, a plurality of drill string elements (25) for making up a drill string, an adapter in said drilling machine for the connection thereof to said drill string for rotating said drill string, detachable coupling sleeves (221) for interconnecting both said adapter and a first drill string element nearest to said drilling machine and two consecutive drill string elements, a brake (151) mounted on said drilling machine for movement in common with said drilling machine along said support, said brake non-rotatably holding a first coupling sleeve interconnecting said adapter and said first drill string element during a disassembly of said drill string, said brake (151) being movable between an inactive position where it is out of engagement with said first coupling sleeve and an active position where it cooperates with said first coupling sleeve, thereby insuring that said first coupling sleeve on said first drill string element remains on said first drill string element when said adapter is disconnected therefrom.

Re. 30,072
SAFETY CLAMP

Richard A. Kleine, Peoria, Ill.; Warren J. Byers, Winsted, Minn., and Charles A. Wright, Columbus, Wis., assignors to Unarco Industries, Inc., Chicago, Ill.

Original No. 3,908,791, dated Sep. 30, 1975, Ser. No. 412,169, Nov. 2, 1973. Application for reissue Sep. 16, 1977, Ser. No. 834,153

Int. Cl.[2] E06C *5/36*

U.S. Cl. 182—8 **19 Claims**

1. A safety device comprising:

a safety belt to be worn by a workman;

gripping means comprising a *gripping* clamp having a body with an internally contoured body and a gripping brake arm pivotally mounted on the body, one end of the gripping brake arm being fastened to said safety belt;

an opposite end of said gripping brake arm having a contoured end positioned inside said internally contoured body for clutching a cable to prevent a workman from falling;

means comprising a web anchored at opposite ends to said belt and passing through said one end of the gripping arm attaching same to said belt; and

clamp supporting means comprising an angular open shelf mounted on said safety belt for supporting said clamp in a horizontal carrying position along the periphery of the safety belt while not in use, said clamp being swingably mounted on the web so as to be alternatively movable into a position for attachment with a cable and movable onto engagement with said angular open shelf on the belt when not in use.

Re. 30,073
CONTROLLABLE STUNT KITE HAVING A PAIR OF SYMMETRICAL BRIDLES

Lynn M. Worsham, 1908 Arctic St., San Leandro, Calif. 94577

Original No. 3,994,454, dated Nov. 30, 1976, Ser. No. 640,427, Dec. 15, 1975. Application for reissue Jun. 23, 1977, Ser. No. 809,405

Int. Cl.[2] B64C *31/06*

U.S. Cl. 244—153 R **14 Claims**

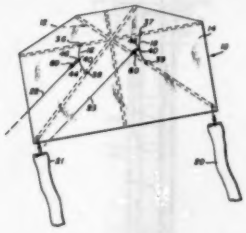
1. A stunt kite comprising:

a first spar member having first and second ends, a second spline member disposed substantially normal to said first member, and third and fourth spar members disposed diagonally relative to said first and second members and intersecting at said second member, said members being formed into a fixed frame;

a covering disposed on said frame and having an outer surface and a longitudinal axis in alignment with said second member, said outer surface being symmetrical in shape about said longitudinal axis and having a lateral dimension which is greater than its dimension corresponding to its longitudinal axis;

[means forming said first member into a bowed shape, such that said covering is bowed into a generally convex configuration;]

[a first bridle connected to] *bridle means consisting of a first and a second bridle, each bridle having only two connection points, said first bridle having one connection point on* said first member at a location intermediate said longitudinal axis and said first end and [to] *having another connection point below said first member on* said fourth member, said first bridle extending outside said outer surface and having a midpoint that lies above the center of gravity *and below said first member* of the kite and serves as an attachment point;



[a] *said* second bridle [connected to] *having one connection point on* said first member at a location intermediate said longitudinal axis and said second end and [to] *having another connection point below said first member on* said third member so as to be symmetrical about said longitudinal axis to said first bridle, said second bridle extending outside said outer surface and having a midpoint that lies above the center of gravity of the kite and serves as an attachment point; and

tail means connected to said third and fourth members proximate the respective bottom ends thereof for providing substantially equal stabilizing drag forces at the bottom corners of said covering, such that when lengths of line are connected to said attachment points the flight pattern of the kite is capable of being precisely controlled.

Re. 30,074
CIRCUIT ARRANGEMENT FOR PRODUCING A SAWTOOTH CURRENT THROUGH A LINE DEFLECTION COIL IN AN IMAGE DISPLAY APPARATUS

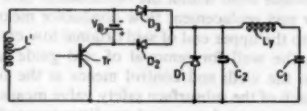
Johannes S. A. van Hattum, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Original No. 3,906,307, dated Sep. 16, 1975, Ser. No. 420,252, Nov. 29, 1973. Application for reissue Sep. 16, 1977, Ser. No. 834,152

Claims priority, application Netherlands, Dec. 19, 1972, 7217254

Int. Cl.[2] H01J *29/70, 29/76*

U.S. Cl. 315—408 **6 Claims**



1. Circuit arrangement for producing a sawtooth current through a line deflection coil, which coil is part of a resonance circuit comprising also a trace capacitor and a retrace capaci-

tor, switching means applying the voltage across the trace capacitor to the deflection coil at line frequency during the trace interval of the sawtooth current, which switching means comprise a first diode and a controlled switch connected in parallel with the said diode via a second diode, and an inductive element having a winding which is connected to the resonance circuit via a third diode, current flowing through the winding and the third diode during the cutoff period of the switch, characterized in that a current which is supplied to the controlled switch by a direct-voltage source connected between the winding and the switch also flows through the winding.

PLANT PATENTS

GRANTED AUGUST 14, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,448

IMPATIENS PLANT

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Feb. 6, 1978, Ser. No. 875,597

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant, as described and illustrated, known by the cultivar name Shoshoni, and particularly characterized by its orange flower; color breaks to a very light orange; a less succulent growth than Red Magic; and very floriferous as is Red Magic with a similar dark foliage.

4,449

IMPATIENS PLANT

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Feb. 6, 1978, Ser. No. 875,600

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name Cheyenne, and particularly characterized by dark green foliage with a tint of red; many flowers; a medium bright red flower with a distinctive light eye; three different commonly occurring color breaks on the flowers; and an upright growth habit with moderate stem size.

4,450

IMPATIENS PLANT

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Jul. 3, 1978, Ser. No. 921,996

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name PAWNEE, and particularly characterized by many orange flowers, a distinctive yellow-green variegated foliage, a spreading growth habit, excellent breaking action, and a slightly cupped flower.

PATENTS

GRANTED AUG. 14, 1979

ERRATA

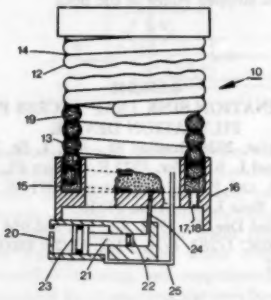
For CLASS	See PATENT NO.
052–001	4,164,095
280–735	4,164,263
414–739	4,164,290
414–136	4,164,291
414–545	4,164,292
414–525	4,164,293
414–786	4,164,294
414–786	4,164,295
414–416	4,164,296
414–481	4,164,297
406–121	4,164,359
435–092	4,164,444
435–063	4,164,446
435–193	4,164,447
435–011	4,164,448
435–030	4,164,449
251–035	4,164,478
521–093	4,164,512
585–427	4,164,518
585–622	4,164,519
525–484	4,164,520
525–187	4,164,521
525–305	4,164,522
261–041 B	4,164,525
315–241 R	4,164,679
357–041	4,164,751

PATENTS

GRANTED AUGUST 14, 1979

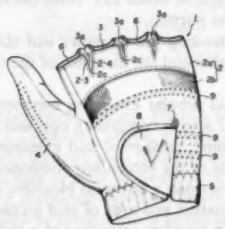
GENERAL AND MECHANICAL

4,164,042
WALL STRUCTURES SUCH AS FOR USE IN DEEP DIVING APPARATUS
Alistair L. Carnegie, Yeovil, England, assignor to Normalair-Garrett (Holdings) Limited, Somerset, United Kingdom
Filed Nov. 14, 1977, Ser. No. 851,416
Claims priority, application United Kingdom, Nov. 18, 1976, 48129/76
Int. Cl.[2] B63C *11/04*
U.S. Cl. 2—2.1 R **8 Claims**



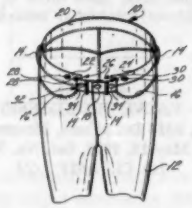
1. A wall structure for forming at least a part of an enclosure, said wall structure adapted to be subjected to a high pressure differential between an external environment existing outside the enclosure and an internal environment within the enclosure, said wall structure comprising tubing, said tubing being flattened over two diametrically opposed areas and being helically wound to be contiguous along the flattened areas, means sealing the wall structure along the continuous flattened areas of the tubing, and a substantially incompressible nonrigid medium filling the interior of the tubing, whereby when the enclosure is subjected to a substantial pressure differential between the internal and external environments, the substantially incompressible nonrigid medium is responsive to said pressure differential.

4,164,043
FINGERLESS GLOVE
Satoru Fujita, 8-6-1, Arakawa, Arakawa-ku, Tokyo, Japan
Filed Jan. 4, 1978, Ser. No. 866,867
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—161 A **5 Claims**



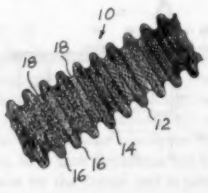
1. A fingerless glove comprising a back portion having inwardly extending spaced apart slits along the upper portion thereof, a palm portion, a thumb portion secured to the palm portion, a plurality of gore tabs spaced from each other and extending from the upper edge of the palm portion, and a plurality of finger-insertion bores formed by sewing the gore tabs to the back portion at the slits thereof with each tab secured to each side of one of the slits.

4,164,044
ADJUSTABLE WAIST BAND FOR JEANS
Marion D. Holmes, 9838 57th Ave., Rego Park, N.Y. 11368
Filed Sep. 2, 1977, Ser. No. 830,056
Int. Cl.[2] A41F *9/02*
U.S. Cl. 2—237 **5 Claims**



1. For jeans and other trousers employing ornamental snap fastening members, an adjustable waistband comprising
a waistband section affixed to the jeans partially encircling the wearer and terminating with a gap in the front, comprising at least a pair of horizontally spaced apart male snap members affixed to each side of said waistband section forming said gap,
said jeans comprising western style slash pockets having the pocket opening in the front of the jeans with a front cutaway, said male snap members being affixed to the jeans in the proximity of the respective center front locations of the western pockets,
and a front closing section formed of the same material as said jeans and bridging said gap and closing said waistband section to encircle said wearer comprising at least two horizontally spaced apart ornamental female members cooperating with a respective pair of male snap members to adjust the size of the waistband, each of said female member being positioned at the center termination of respective opposite slash pockets to be located in said waistband section whereby the ornamental snap members appear to be part of the normal ornamental decoration of said jeans in the front of the waistband section.

4,164,045
ARTIFICIAL VASCULAR AND PATCH GRAFTS
Jack C. Bokros; Hong S. Shim, and Axel D. Haubold, all of San Diego, Calif., assignors to CarboMedics, Inc., San Diego, Calif.
Filed Aug. 3, 1977, Ser. No. 821,602
Int. Cl.[2] A61F *1/00*
U.S. Cl. 3—1.4 **6 Claims**



1. A flexible artificial fabric prosthesis for prolonged or permanent implantation in a living body, comprising a fiber substrate array of organopolymeric fibers having a tensile

modulus of elasticity of at least about 2×10^6 psi, a tensile strength of at least about 20,000 psi and a fiber diameter of less than about 25 microns, said fiber substrate being adapted to sustain the functional stresses encountered by the implanted prosthesis and to provide a desired high degree of prosthesis flexibility without straining more than about 5 percent, and

a dense, adherent isotropic carbon coating on the fibers of at least one side of said fiber substrate array having a BAF of about 1.3 or less, a density in the range of from about 1.6 gm/cm^3 to about 2.0 gm/cm^3, a thickness of less than about 7000 Angstroms, and a tensile fracture strain of at least about 5 percent, said fibers being individually provided with said adherent carbon coating and not substantially bonded together thereby, whereby said coated fibers are free to bend to a bending radius of about 0.025 cm or less and to glide over each other in the flexure of the prosthesis without substantial breaking of said carbon coating.

4,164,046

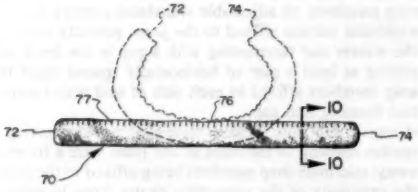
VALVE PROSTHESIS

Denton A. Cooley, 3014 Del Monte, Houston, Tex. 77019

Filed May 16, 1977, Ser. No. 797,107

Int. Cl.[2] A61F *1/22*

U.S. Cl. 3—1.5 **3 Claims**



3. A heart valve prosthesis comprising a spine portion comprising:

a flexible fabric, initially straight though bendable into an open ring configuration, the length of the spine portion approximating the arcuate distance between commissures of a selected heart valve leaflet; and

a velour sheath encapsulating the entire fabric spine portion.

4,164,047

MULTIPURPOSE GYMNASIUM

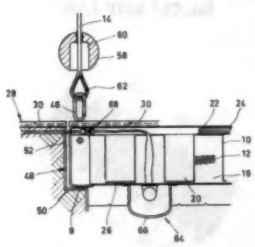
Janos Barothy, Eggenvil, Switzerland, assignor to Laszlo F. Arato, Buochs, Switzerland, a part interest

Filed Jul. 14, 1977, Ser. No. 815,514

Claims priority, application Switzerland, Jul. 16, 1976, 09121/76

Int. Cl.[2] E04H *3/19, 3/14*

U.S. Cl. 4—172.11 **9 Claims**



1. In combination for a multipurpose gymnasium having a ceiling, a swimming pool having at least two stepped edges located within a floor area,

a swimming pool cover of the same general shape as the swimming pool and adapted to rest on said swimming pool stepped edges and be substantially flush with the floor area surrounding the pool, said cover including a top surface on a compound load support element, said load support element being of sheet metal material substantially about 0.5 mm thick which is undularly bent and formed of a generally rectangular shape to define cavities, the height of each section of said load support element being at least about 80% of the thickness of the cover, and foam plastic material filling said cavities and in contact with the sheet metal material to strengthen said load support element and prevent deformation of the load support, and

means located on the ceiling for suspending the cover above the pool and for raising said cover from and lowering it to rest on said stepped edges of the pool.

4,164,048

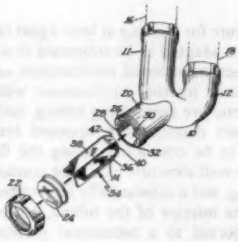
COMBINATION SINK TRAP ACCESS PORT FILTRATION DEVICE

John H. Kampfer, 2026 Bradley St., Apt. 1, St. Paul, Minn. 55117; Michael L. Kampfer, 2322 E. Cowern Pl., N. St. Paul, Minn. 55109, and Philip A. Martens, 6011 W. Bald Eagle Blvd., White Bear Lake, Minn. 55110

Filed Dec. 30, 1977, Ser. No. 866,054

Int. Cl.[2] E03C *1/282, 1/26;* F16L *55/24;* B01D *35/16*

U.S. Cl. 4—292 **2 Claims**



1. A combination sink trap access port filtration device comprising:

(a) a trap pipe having a straight portion terminating in a curved portion underlying said straight portion,

(b) a downwardly extending tubular extension member connected to and communicating at its inner end with the trap pipe at the juncture of the straight portion and the curved portion,

(c) the longitudinal axis of said tubular extension member being at an angle of about 135° from the longitudinal axis of said straight portion,

(d) a screen extending the diameter and the length of the tubular extension and the diameter of the trap pipe at said juncture,

(e) means in said tubular extension member for releasably mounting said screen comprising opposed channel formations on the inner surface of said extension in which the opposed edges of the screen are positioned,

(f) said screen carrying a flat solid blocking member having the same formation and area of said screen,

(g) said blocking member extending at a right angle to said screen for alternative insertion into said opposed channel formations,

(h) said tubular extension, screen and blocking member forming a pocket wherein material caught by said screen and blocking member will build up in said tubular extension without interrupting fluid flow through said trap, and

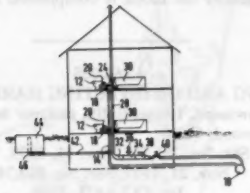
(i) a cap for the outer end of said tubular extension.

4,164,049

VACUUM-TYPE WATER REMOVAL SYSTEM FOR HOUSES, FACTORIES, SHIPS AND THE LIKE

Harald R. Michael, Hamburg, Fed. Rep. of Germany, assignor to Electrolux GmbH, Fed. Rep. of Germany

Filed Nov. 29, 1977, Ser. No. 855,672
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654437
Int. Cl.[2] E03D *5/00*
U.S. Cl. 4—300 4 Claims



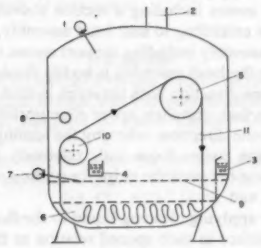
1. In a vacuum-type water removal system for houses, factories, ships and the like, wherein waste water collection devices such as sanitary facilities and other waste water producing and/or collection devices, are individually connected through a cut-off valve to a vacuum waste water removal line, the improvement wherein said waste water collection devices include an overflow opening, and supplementary connecting means are provided for connecting the overflow opening to a gravity feed conduit which feeds a collection chamber connected through a cut-off valve to the vacuum waste water removal line.

4,164,050

TEXTILE TREATMENT PROCESS

Hans-Peter Stakelbeck, Binzen, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basel, Switzerland

Filed Nov. 9, 1977, Ser. No. 849,838
Claims priority, application Switzerland, Nov. 11, 1976, 14211/76; Aug. 22, 1977, 10252/77
Int. Cl.[2] D06B *3/00, 21/02*
U.S. Cl. 8—149.1 10 Claims



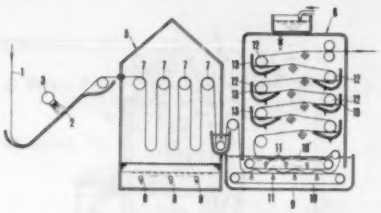
1. In a textile treatment process wherein the textile substrate to be treated is supported above a treatment liquor and is passed repeatedly through such liquor in such manner that at any given time part of said substrate is in contact with the liquor and part is supported out of the liquor, the improvement wherein the liquor to goods ratio is in the range of 5:1 to 15:1 and an envelope of heated air or steam is caused to surround and heat at least a part of that part of the substrate which is supported out of contact with the treatment liquor, said envelope of heated air or steam being maintained at a distance above the liquor at least until a substantially uniform temperature is achieved between the heated air or steam, the substrate and the liquor, said liquor being heated by passage therethrough of the heated substrate.

4,164,051

CONTINUOUS DYEING METHOD FOR THICK TEXTILE MATERIALS

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Co. Ltd., Wakamama, Japan

Filed Aug. 23, 1978, Ser. No. 935,879
Claims priority, application Japan, Sep. 5, 1977, 52-106517
Int. Cl.[2] D06B *1/02, 21/00*
U.S. Cl. 8—149.1 1 Claim



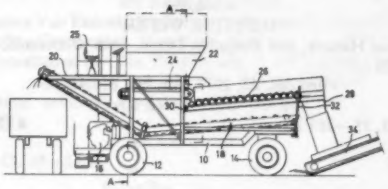
1. A method for continuously dyeing a thick textile material such as a blanket or carpet material or the like wherein the thick textile material is continuously pulled upward and guided over a slanting plate from a lower position to a higher position; spraying from a nozzle tube a dye solution at the thick textile material while it is being guided upward over said slanting plate; setting the spraying quantity of said dye solution discharged out of the nozzle tube such that the entire sprayed quantity of the dye solution is absorbed by the thick textile material without having any portion thereof flowing down off the textile material while ensuring sufficient and even impregnation of the textile material with the dye solution without necessitating provision of any wringing roll arrangement downstream of the nozzle tube; and then continuously passing the thick textile material thus impregnated with the dye solution through a hygro-thermic treatment chamber for dye fixation and then through a device for washing with water.

4,164,052

SELF-PROPELLED APPARATUS FOR CLEANING BEETS

Andre Robache, Feucherolles, France, assignor to Fives-Cail Babcock, Paris, France

Filed Mar. 28, 1978, Ser. No. 890,994
Int. Cl.[2] A23N *13/00*
U.S. Cl. 15—3.11 8 Claims



1. A self-propelled apparatus for cleaning beets in the field, comprising a longitudinally extending frame mounted on wheels and carrying a first hopper for receiving beets to be cleaned, a screen for cleaning the beets by scraping away the dirt therefrom and a discharge conveyor for dirt positioned beneath the screen, in which apparatus the hopper is mounted on a raised platform on the frame and is provided with a beet conveyor for conveying beets from the hopper to the screen, the screen extends longitudinally relative to the frame, on one side of the hopper, and the dirt-discharging conveyor is disposed longitudinally beneath the screen and the hopper, the

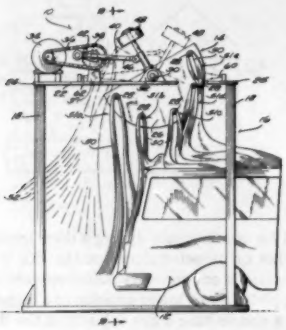
arrangement being such that, in use, the cleaned beets and the dirt are discharged at opposite ends of the frame.

4,164,053

VEHICLE WASHING APPARATUS

Richard J. Shelstad, 12711 N. Woodberry Dr., Mequon, Wis. 53092

Filed Apr. 12, 1974, Ser. No. 460,347
Int. Cl.[2] B60S *3/04*
U.S. Cl. 15—97 B **13 Claims**



1. An apparatus for washing a vehicle as it moves along a predetermined travel path comprising

carriage means located above the height of the vehicle to be washed and extending transversely of and entirely across the width of the vehicle travel path,

means supporting said carriage means for oscillatory, arcuate movement about a generally horizontal axis extending transversely of the vehicle travel path;

at least one curtain member of a flexible, felt-like material suspended from a support means carried by said carriage means and having a free end extending below the upper portions of the vehicle and transversely of the vehicle travel path;

means for wetting the upper portions of the vehicle; and

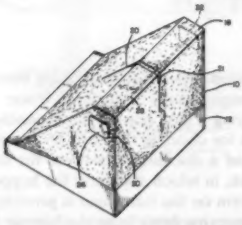
drive means for oscillating said carriage means through an arcuate path about said axis to swing said curtain member back and forth relative to the vehicle in a direction generally parallel to the vehicle travel path so that said curtain member scrubs the upper portions of the vehicle as it moves along the travel path.

4,164,054

DIPSTICK WIPER

Cameron Hanson, and Benjamin Dixon, both of Osceola, Wis. 54020

Filed Jul. 25, 1977, Ser. No. 818,454
Int. Cl.[2] G01F *15/12, 23/04*
U.S. Cl. 15—210 B **4 Claims**



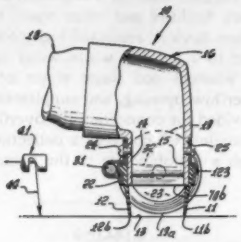
1. An oil dipstick wiper comprising in combination a box configurated housing, said housing including a bottom wall and opposite end and side walls and being open at the top a block of porous foam plastic, resilient material rising from the housing adhered to the inside thereof said clock being tapered towards its top, said block having a slot, said slot being transverse to and extending through the tapered portion of said block, means on the bottom of said housing for affixing the same to a surface and a compressing means being positioned adjacent each end of said block and generally parallel thereto, said compressing means being interconnected by an inelastic flexible strand which extends through said block and traverses said slot, whereby the block is compressed by depression of said means.

4,164,055

CLEANING AND DISINFECTING HARD SURFACES

Robert L. Townsend, Irvine, Calif., assignor to Purex Corporation, Lakewood, Calif.

Division of Ser. No. 786,352, Apr. 11, 1977. This application Nov. 21, 1977, Ser. No. 853,747
Int. Cl.[2] A47L *7/00*
U.S. Cl. 15—321 **10 Claims**



1. In apparatus for removing loose soils and bacteria from a hard floor surface, the combination comprising

(a) a head assembly including two upright, longitudinally spaced, resiliently flexible strips extending generally laterally horizontally in parallel relation; the strips projecting downwardly to engage the floor surface,

(b) means for applying suction to the space between the strips, said means including a suction source including a suction line extending to said head assembly,

(c) the head assembly including support means to engage the floor while the head assembly is bodily displaced longitudinally in one direction with the strips in such proximity to the floor surface that their lower edge portions are flexed in the opposite direction, whereby the leading strip in said one direction passes loose soils relatively therebeneath into the space between the strips for suction removal from said space, and

(d) means for applying cleaning liquid to the floor surface to wet said surface in such spaced relation to the strips that when the head assembly and strips are bodily displaced in the opposite longitudinal direction the lower portions of the strips flex relatively in said one direction and the leading strip in said opposite direction passes applied liquid relatively therebeneath into the space between the strips for suction removal from said space, said means including at least one spray nozzle and a source of said liquid including a valve controlled duct communicating with said nozzle,

(e) said nozzle located outside the space between said strips to spray said liquid in a fan-shaped spray pattern visibly and openly onto the floor surface in longitudinally spaced relation to said strips,

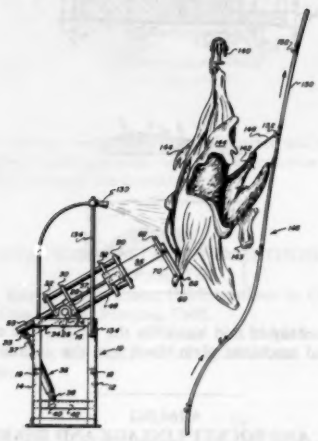
(f) there being an elongated handle carrying both said head assembly and said nozzle, said duct and suction line associated with said handle.

4,164,056

LEG HOLDING MACHINE

Otto L. Hilgner, 1340 Fairground Rd., Hatfield, Pa. 19440, and Donald Gouldey, 660 Clemens Rd., Telford, Pa. 18969

Filed Oct. 19, 1977, Ser. No. 843,582
Int. Cl.[2] A22B *5/16*
U.S. Cl. 17—21 11 Claims



1. A machine for holding the legs of animal carcasses to support a carcass during a slaughtering operation such as hide stripping or up-pull skinning comprising:

jaw means for gripping individually a pair of legs of a carcass and holding the gripped legs in side-by-side relation,

means for moving said jaw means between open and closed positions, and

means for moving said jaw means to a desired elevated position to position the same for receiving the carcass legs to be gripped thereby,

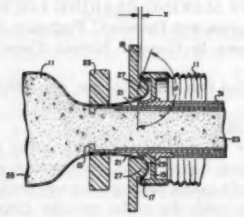
said means for moving said jaw means to a desired elevated position including means for reciprocating said jaw means back and forth along a path of movement and means for pivoting said reciprocating means about an axis transverse to said path of movement.

4,164,057

FOOD CASING STUFFING SIZING CONTROL METHOD

Paul H. Frey, La Grange, and Vytautas Kupcikevicius, Chicago, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 686,425, May 14, 1976, Pat. No. 4,077,090. This application Oct. 5, 1977, Ser. No. 839,560
Int. Cl.[2] A22C *11/00*
U.S. Cl. 17—49 3 Claims



1. In a method of sizing control in food casing stuffing wherein casing being stuffed is first expanded by interior circumferential contact and then contracted by exterior circumferential contact, the distance between the locations of interior and exterior circumferential contact being variable,

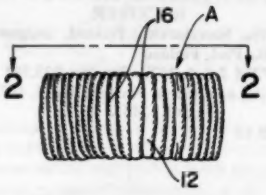
the improvement of increasing the area of exterior circumferential contact by changing the direction of progression of the casing from a first position wherein minimal exterior circumferential contact obtains, towards and into a second position wherein maximal exterior circumferential contact obtains, and wherein which second position the casing passes through a traverse in a direction opposite to its direction of progression.

4,164,058

DECORATIVE RING-LIKE STRUCTURE AND METHOD OF MAKING SAME

Ivan J. Barna, 4186 Colony, South Euclid, Ohio 44121

Filed Feb. 3, 1978, Ser. No. 874,808
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—1 12 Claims



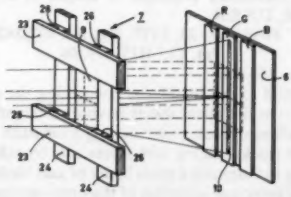
1. A ring-like structure comprising: a generally cylindrical sleeve of substantially rigid plastic material, said sleeve being generally longitudinally split to define a circumferential space between spaced-apart non-overlapping opposed circumferential ends; a fabric tube internally sized for close reception over said sleeve and having a length between opposite tube ends which is greater than the circumference of said sleeve; said tube being closely received over said sleeve with said tube ends abutting; and, said circumferential space having a circumferential width greater than the thickness of the material forming said tube when said sleeve is in an unstressed condition, whereby said tube is positioned on said sleeve by telescoping one said tube end over one said sleeve end and then circumferentially sliding said tube onto said sleeve.

4,164,059

METHOD OF MANUFACTURING A COLOR DISPLAY TUBE AND COLOR DISPLAY TUBE MANUFACTURED BY SAID METHOD

Johannes Van Esdonk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 757,675, Jan. 7, 1977, abandoned. This application Apr. 19, 1978, Ser. No. 897,735
Claims priority, application Netherlands, Jan. 16, 1976, 7600421
Int. Cl.[2] H01J *9/02*
U.S. Cl. 29—25.15 7 Claims



1. In the manufacture of a colour cathode ray tube having a focusing shadow mask, the method comprising the steps of:

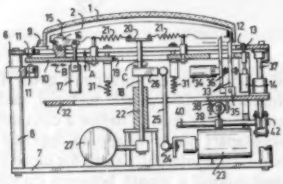
forming on one surface of an electrically insulating sheet a first electrode affixed to said sheet and having a plurality of elongated metallic conductors spaced from each other to define a first plurality of openings therebetween; forming on the opposite surface of said sheet a second electrode affixed to said sheet and having a plurality of elongated metallic conductors spaced from each other to define a second plurality of openings therebetween such that a portion of each opening of said second plurality is aligned with a portion of one of said openings of said first plurality; etching through said sheet at regions thereof aligned with said aligned portions of said openings to form apertures for passing electrons therethrough, said conductors of said first and second electrodes defining an electron lens for producing electron focusing fields in said apertures and with said sheet forming said shadow mask; and mounting said shadow mask in an envelope of the cathode ray tube.

4,164,060

APPARATUS FOR ASSEMBLING A SHADOW MASK AND PANEL OF A PICTURE TUBE OF A TELEVISION RECEIVER

Matti O. Hartta, Soormarkku, Finland, assignor to Oy. W. Rosenlew AB., Pori, Finland

Filed Jul. 6, 1978, Ser. No. 922,391
Claims priority, application Finland, Jul. 6, 1977, 772124
Int. Cl.[2] H01J *9/18*
U.S. Cl. 29—25.19 **8 Claims**



1. An apparatus for assembling a shadow mask (2) and panel (1) of a picture tube of a televison receiver, said mask and panel being provided with fixing members (3,4) engaging each other in a fixed relative position of said mask and panel, said apparatus comprising separate supports (6,10) for said mask and panel, said supports being adjustable in relation to each other, characterized in that one (10) of said supports is made as a floating plate movable relative to the other support (6) parallel (B) to the plane of said plate and in the direction (A) of an axis transverse to said plane and rotatable (C) around said axis, and that operating means (10,23–30) are connected to said floating plate to move said plate mechanically in said plane as well as along and about said axis whereby a mask and panel on said supports are moved relative to each other to cause final engagement of said fixing members.

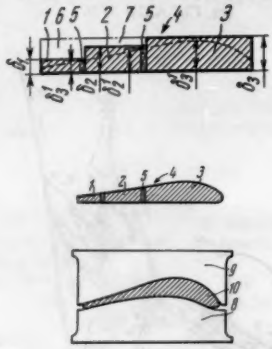
4,164,061

METHOD OF MAKING ROTOR BLADES OF RADIAL-AXIAL HYDRAULIC MACHINES

Grigory A. Bronovsky, 7 Sovetskaya, 7, kv. 6; Mikhail O. Bukchin, Poljustrovsky prospekt, 7, kv. 34, and Alexandr I. Goldfarb, B. Okhtensky prospekt, 6, korpus 2, kv. 288, all of Leningrad, U.S.S.R.

Filed Aug. 24, 1977, Ser. No. 827,342
Int. Cl.[2] B23P *15/04*
U.S. Cl. 29—156.8 B **1 Claim**

1. A method of making blades comprising the steps of: rolling at least two flat metal sheets having rectangular cross-sections and different thicknesses; cutting from each sheet a piece of flat sheet stock; placing said pieces side-by-side, said pieces cooperating to comprise a plain blank of said blade in a desired direction of principal variation of the cross-sectional thickness thereof, said blank having the lateral dimensions defined by the developed contour of the blade be made; the thickness of each of said pieces being at least equal to the maximum cross-sectional thickness of said blank at the portion thereof defined by said piece; welding adjacent edges of said pieces together to obtain said plain sheet blank; machining said blank to obtain a



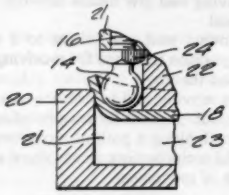
required contour of said blank for the blade to be made; and bending said machined plain blank into the desired shape of said blade.

4,164,062

BALL AND SOCKET LINKAGE AND BEARING ASSEMBLY AND METHOD OF FABRICATING

Jack W. Sullivan, 2236 Island Beach Rd., Oshkosh, Wis. 54901

Filed Dec. 12, 1977, Ser. No. 859,325
Int. Cl.[2] B21D *53/12*
U.S. Cl. 29—148.4 A **6 Claims**



1. The method of forming metal onto the exterior surface of a tool having a cross sectional area at progressive points along the line of motion of the tool relative to the metal which gradually increases and then decreases, comprising the steps of

initially cupping the metal on said tool and then cold extruding the metal over the surface past its maximum cross sectional area whereby the metal is secured to the tool.

4,164,063

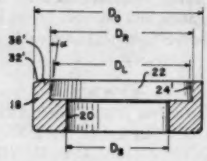
PROCESS FOR MAKING BEARING LOCKING COLLAR

John Cenko, Huron, and Thomas C. Pechauer, Norwalk, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1978, Ser. No. 880,556
Int. Cl.[2] B22F *3/24*
U.S. Cl. 29—420.5 **3 Claims**

1. A process of making a locking collar from powdered metal comprising the steps of: compacting powdered metal into the form of a collar having a central shaft receiving aperture concentric with the collar exterior circumferential surface, the collar further having a counterbore eccentric to the shaft receiving aperture and the collar exterior circumferential surface, the compacting simultaneously forming a 24°–26° chamfer on the collar exterior circumferential surface around the eccentric counterbore and concentric therewith; sintering

the compacted powdered metal; and swaging the end of said collar containing the eccentric counterbore forming a 6°–9°



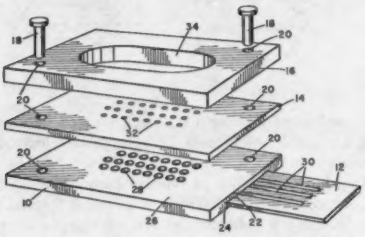
back taper in the counterbore inside diameter while maintaining a straight outside diameter on the collar exterior circumferential surface around the counterbore.

4,164,064

SOLDER PREFORM LOADING METHOD AND APPARATUS

Joseph A. Reavill, Mira Loma, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Mar. 13, 1978, Ser. No. 886,215
Int. Cl.[2] H01R *43/02*; B23K *37/04*
U.S. Cl. 29—468 **4 Claims**



1. Apparatus for loading solder preforms on the pins of a multiple pin connector in which the pins are arranged in spaced rows, comprising:

a positioning plate having a plurality of sockets therein corresponding to the pattern of pins on the connector to be loaded, said positioning plate having an elongated channel into which said sockets open, with the rows of sockets longitudinal to the channel,

a solder preform retainer slidably mounted in said channel and having slots open at one end and longitudinally aligned with the rows of sockets, said slots being narrower than said sockets but wide enough to receive connector pins therethrough,

each of said sockets being dimensioned to hold a single substantially toroidal solder preform in axial alignment therein.

4,164,065

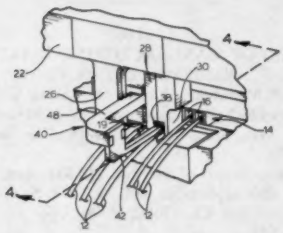
CRIMPING AND WIRE LEAD INSERTION MACHINE HAVING IMPROVED INSERTION MEANS

Jack F. Funcik, Downers Grove, and Steven F. Wright, Glen Ellyn, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 13, 1978, Ser. No. 885,680
Int. Cl.[2] B23P *23/00, 19/02*
U.S. Cl. 29—564.6 **3 Claims**

1. In a machine for crimping a plurality of electrical terminals one at a time onto wire leads, said machine including a press actuable for up and down movement and a die assembly mounted on said press, said die assembly including a die shoe with a crimp station whereat a terminal is crimped onto a wire lead, an insertion station whereat a terminated wire lead is presented, and a housing indexing assembly for supporting at least one connector housing having a plurality of terminal receiving recesses formed therein and indexing one of said recesses at the insertion station, an insertion assembly for inserting a terminated wire lead into a terminal receiving recess at the insertion station, a punch holder mounted on the press for movement therewith opposite and spaced from said die shoe having a crimp punch over the crimp station to crimp a terminal thereat, and a terminal feed assembly for supporting and feeding a strip of terminals one at a time to the crimp station in response to the movement of the press, the improvement comprising:

said insertion assembly including a push member for engaging a terminal crimped on the end of a wire lead and inserting said terminal into the terminal receiving recess at the insertion station, said push member being mounted for programmed reciprocal movement in a direction substantially coincident with the longitudinal axis of said recess in response to the press between a preinsertion position not in contact with the terminal and an insertion position in engagement with the terminal inserted within the recess; and



guide means mounted on the punch holder above the insertion station for guiding the terminal into a terminal receiving recess.

4,164,066

FABRICATION OF ANODES BY PLASMA SPRAY DEPOSITION

William F. Vierow, West Acton, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation of Ser. No. 381,835, Jul. 23, 1973, abandoned, which is a continuation of Ser. No. 198,306, Nov. 12, 1971, abandoned. This application Jun. 9, 1975, Ser. No. 582,337
Int. Cl.[2] H01G *9/00, 9/05, 9/06*
U.S. Cl. 29—570 **7 Claims**

1. A method of making an anode means capable of performing an electrical function including the steps of forming a

plasma spray of film-forming metal particles, passing a headed portion of a dielectric film-forming metal means including the headed portion and an elongated portion thru the spray of dielectric film-forming metal particles, the headed portion including a section facing away from the elongated portion in a direction substantially parallel to the central longitudinal axis of the elongated portion, depositing sprayed film-forming metal particles over the section of the headed portion of the film-forming metal means, and sintering the film-forming metal means and the deposit to help bond the film-forming metal means and the deposit, the sintered deposit being porous and capable of acting as an anode means.

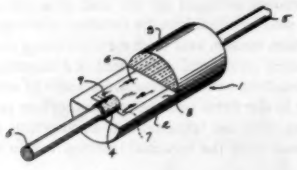
4,164,067
METHOD OF MANUFACTURING ELECTRICAL RESISTOR ELEMENT

Ivan L. Brandt, Milwaukee; Theodor von Alten, Grafton, both of Wis.; Richard E. Voss, Succasunna, N.J., and Oscar L. Denes, Greendale, Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 718,231, Aug. 27, 1976, abandoned. This application Jan. 26, 1978, Ser. No. 872,411

Int. Cl.[2] H01C *17/00, 7/00*

U.S. Cl. 29—620 **11 Claims**



1. A method of forming a resistor element having a substrate member, a metallic termination layer and a resistive layer, said layers deposited on preselected areas of said substrate member, said method comprising the steps of:

selecting a metallic, conductive termination material with a given softening temperature, said metallic material being dispersed in an organic vehicle;

selecting a resistive composition comprising discrete electrically conductive particles, glass forming materials providing a matrix for supporting said conductive particles, and an organic binder material for temporarily supporting said particles and glass forming materials in the green state during deposition and prior to sintering, said resistive composition having a sintering temperature below the softening temperature of said conductive termination material;

selecting an insulating substrate composition comprising a mixture of ceramic-glass forming materials having a sintering temperature below the softening temperature of said conductive termination material, and an organic binder material for temporarily supporting said ceramic-glass forming materials in the green state prior to sintering;

forming said insulating substrate member from said substrate material to provide a surface for receiving and supporting a layer of said termination material and a layer of said resistive composition;

depositing a layer of said metallic conductive termination material on at least a portion of said formed unfired substrate member;

depositing a layer of said resistive composition on a portion of the supporting surfaces of said unfired substrate member,

said termination layer and said resistive layer being in contact with one another and said termination layer adapted to connect said resistive layer to an electrical circuit; and

removing the said organic vehicle and binder materials from said formed substrate member, said deposited termination layer and said resistive layer prior to co-firing said substrate member and said layers; and

co-firing said formed substrate member and its deposited metallic termination and resistive layers to simultaneously sinter said resistive layer and said substrate member.

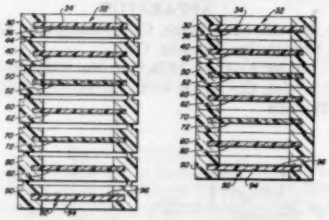
4,164,068
METHOD OF MAKING BIPOLAR CARBON-PLASTIC ELECTRODE STRUCTURE-CONTAINING MULTICELL ELECTROCHEMICAL DEVICE

Joseph A. Shropshire, Westfield, and Hsue C. Tsien, Livingston, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 825,605, Aug. 18, 1977, Pat. No. 4,125,680. This application Dec. 19, 1977, Ser. No. 862,174

Int. Cl.[2] H01M *6/48*

U.S. Cl. 29—623.1 **16 Claims**



1. A method of making a multicell electrochemical device having a plurality of bipolar carbon-plastic electrode structures, comprising:

(a) forming a plurality of bipolar carbon-plastic electrode structures, each of said structures being formed by:

(i) molding a thin conductive carbon-plastic electrode sheet from a heated mixture of particulate conductive carbon and plastic material, said mixture having sufficient carbon therein so as to produce a sheet having an electrical conductivity of at least about 0.1 mho-cm, said carbon having an average particle size of about 10 millimicrons to about 100 microns;

(ii) establishing a frame of dielectric plastic material around said thin conductive carbon-plastic electrode sheet so as to encompass a portion of both sides of said thin conductive carbon-plastic electrode sheet, said frame having inner borders defining an open central area into which said sheet is disposed, and said frame having a front surface and a back surface, at least one of said surfaces having a projection formed thereon; and,

(iii) sealing said frame to said sheet at the inner borders of said sheet so as to render the resulting structure liquid impermeable;

(b) forming a plurality of electrochemical cell elements, each of said elements having an electrochemical cell-functional center portion circumscribed by a dielectric plastic frame having a front surface and a back surface, at least one of said surfaces having a projection formed thereon;

(c) stacking said plurality of electrode structures and plurality of electrochemical cell elements with one another to form a group of items in an electrochemical cell-functional arrangement and in such a manner that the projection on the frame of each item contacts a frame surface of the next item in the stack; and

(d) joining each of the items in the stack to one another by sealing each item to the next item at the point where its projection contacts the frame surface of the next item, said sealing being sufficiently established so as to form a continuous electrochemical device capable of holding liquid therein.

4,164,069

METHOD OF PREPARING A POSITIVE ELECTRODE FOR AN ELECTROCHEMICAL CELL

Zygmunt Tomczuk, Orland Park, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1978, Ser. No. 901,046
Int. Cl.[2] H01M *6/14, 4/58*
U.S. Cl. 29—623.1 7 Claims

1. A method of preparing a positive electrode for use in a secondary electrochemical cell also including a negative electrode having lithium or lithium-metalloid alloy as the neagative electrode reactant and a molten salt including a lithium halide as electrolyte, said method comprising

combining FeS with Li_2S to form the compound Li_2FeS_2;

incorporating said compound into an integral structure for use as a positive electrode; and

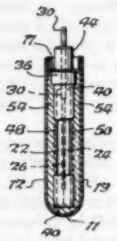
assembling said positive electrode into said electrochemical cell.

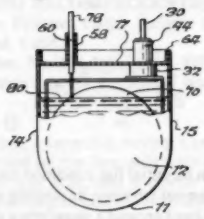
4,164,070

METHOD OF MAKING A LITHIUM-BROMINE CELL

Wilson Greatbatch, Clarence; Ralph T. Mead, Kenmore; Robert L. McLean, Clarence; Frank W. Rudolph, Depew, and Norbert W. Frenz, North Tonawanda, all of N.Y., assignors to Eleanor & Wilson Greatbatch Foundation, Akron, N.Y.

Division of Ser. No. 722,653, Sep. 16, 1976, Pat. No. 4,105,833, which is a continuation-in-part of Ser. No. 617,280, Sep. 29, 1975, Pat. No. 3,994,747. This application Dec. 19, 1977, Ser. No. 861,527
Int. Cl.[2] H01M *4/36*
U.S. Cl. 29—623.2 14 Claims





1. A method of making a lithium-bromine cell comprising the steps of:

(a) providing a casing of electrically conducting material;

(b) placing lithium-anode means in said casing;

(c) providing a filling element having a passage therethrough;

(d) fixing said filling element to said casing with one end of said passage in communication with the interior of said casing and the other end externally exposed;

(e) sealing said casing;

(f) introducing bromine cathode material through said passage in said filling element to the interior of said casing into operative relationship with said lithium anode means to form a solid lithium bromide electrolyte between said lithium anode means and said bromine cathode material and into operative relationship with said casing to cause said casing to serve as a cathode current collector; and

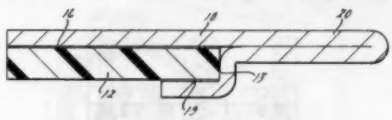
(g) closing said passage of said filling element.

4,164,071

METHOD OF FORMING A CIRCUIT BOARD WITH INTEGRAL TERMINALS

Joseph K. Kruzich, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1977, Ser. No. 865,035
Int. Cl.[2] H05K *3/04, 3/22*
U.S. Cl. 29—625 5 Claims



1. A method of integrally forming common electrically conductive blade terminals connected to opposite sides of a printed circuit board, including the steps of:

providing a substrate board;

providing a holder for said board having one exposed surface extending outward from at least one edge of said board;

depositing a layer of uncured adhesive on the exposed surface of said board;

depositing a layer of conductive material on said layer of uncured adhesive, so as to extend a portion of said material outward a predetermined distance from said edge over said exposed surface of said holder;

die stamping said layer of conductive material to form a conductor pattern and linear terminals on said board and die stamping said portion of said conductive layer outward from said edge to form linear extensions of said linear terminals;

depositing a second layer of uncured adhesive to a portion of the opposite surface of said board adjacent said edge;

folding said linear extensions through 180°, at a first distance from said edge wherein said first distance being such that said fold is in a noncontacting relationship with said edge and said first distance is less than half said predetermined distance of linear extension from said edge, so as to overlap said second adhesive layer with the remainder of said folded linear extensions to integrally form said blade terminals; and

curing said adhesive layers.

4,164,072

AUTOMATIC PIERCING NUT ASSEMBLING ARRANGEMENT

Katsumi Shinjo, Osaka, Japan, assignor to Yugenkaisha Shinjo Seisakusho, Osaka, Japan

Filed Dec. 12, 1977, Ser. No. 859,596
Claims priority, application Japan, Dec. 11, 1976, 51/166296[U]
Int. Cl.[2] B23P *19/04;* B23Q *17/02*
U.S. Cl. 29—720 28 Claims

1. An automatic piercing nut assembling arrangement, comprising:

a punch means slidably supported in a punch holder connected to a press ram for pressing a piercing nut into a metal panel;

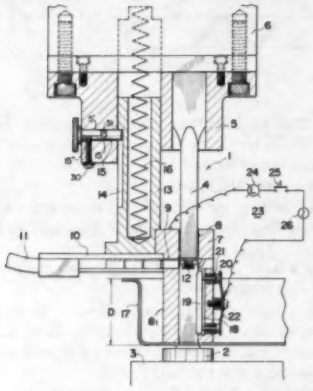
a swaging die means arranged opposite said punch means and cooperating therewith for swaging metal from the

metal panel inwardly of the piercing nut to anchor the same in the metal panel;

means interposed between said punch means and said swaging die means for holding a piercing nut in a punching path of said punch means including a holding block having an extended leg portion and a bore means extending therethrough for receiving a piercing nut, said bore means having a sufficient diameter so as to permit said punch means to pass therethrough during a downward movement of the press ram, said extended leg portion having a predetermined axial length so as to permit the piercing nut to be anchored at a bottom wall of a deep drawn metal panel;

means for supplying piercing nuts to said holding means;

means operatively connected with said holding means for causing a monitoring of a presence of a piercing nut therein and for providing a signal of the presence of a piercing nut in a punching path of the punch means including a nut detector means arranged in the bore means of said holding block, lamp means for providing a visible signal of a presence of a piercing nut in the bore means, circuit means for interconnecting said holding means to said detector means and said lamp means, and means for selectively actuating said circuit means so as to determine if a piercing nut is present in the bore means;



said nut detector means includes an electrical conductor arranged in said circuit means, and said bore means includes an axially extending recess means provided in at least a portion of said extended leg portion for accommodating said electrical conductor;

means for normally biasing said electrical conductor into said bore means;

at least two freely supported electrically insulated pin means for mounting said electrical conductor at said recess means of said extended leg portion; and

wherein said biasing means includes a leaf spring means engaging each of said insulated pin means.

4,164,073

APPARATUS FOR FEEDING AND BENDING SEED PLATE LUG STRIPS

Pertti Tuominen, Sorkka, Finland, assignor to Lonnstrom OY, Finland

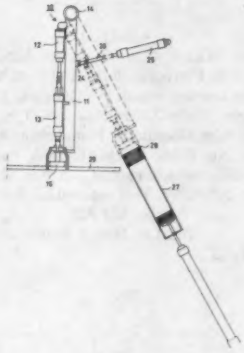
Filed Feb. 8, 1978, Ser. No. 876,129

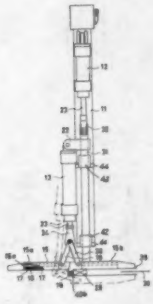
Claims priority, application Finland, Feb. 8, 1977, 770417

Int. Cl.[2] B23P *19/04;* H01M *4/00*

U.S. Cl. 29—731 **15 Claims**

1. In an apparatus for feeding a lug strip and bending the same around a supporting rod in preparation for fixing free ends of the bent lug strip to an edge region of a seed plate in an electrolytic refining plant, tool means for bending a lug strip around the supporting rod and including a holding means for holding a lug strip initially in a flat condition against a supporting rod in preparation for bending the lug strip around the supporting rod and for picking up a lug strip from a supply means at a receiving station and holding the same during movement of the tool means from a receiving station to a working station, said tool means having a starting position where the lug strip is held by the holding means of the tool means at a working station in its initial flat condition and having an end position where the lug strip is bent around the supporting rod with said tool means being movable from said starting to said end position during bending of the lug strip and then being movable back from said end position to said starting position thereof in preparation for receiving the next lug strip, operating means operatively connected to said tool means for carrying the latter and for operating the tool means to move the same between its starting position where the holding means



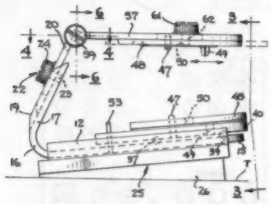


holds the lug strip in its initial flat condition and its end position so that during movement between its starting and end positions the lug strip will be bent around a supporting rod, frame means carrying said operating means, moving means operatively connected to one of said operating or frame means for moving said tool means between a working station where said operating means operates said tool means to bend a lug strip around a supporting rod and a receiving station where said tool means receives a flat lug strip which is held at said tool means by said holding means thereof, and supply means at said receiving station for supplying a flat lug strip to said tool means when the latter is at said receiving station, said tool means after being operated by said operating means at said working station being moved by said moving means from said working station to said receiving station to receive the next lug strip from said supply means.

4,164,074
DENTAL ARTICULATOR WITH INTERCHANGEABLE MOUNTS

John K. Lawler, deceased, late of Gardena, Calif.; John W. Mitchell, Sr., Gardena, and Kenneth H. Oyama, Huntington Beach, both of Calif., assignors to Doris Gene Lawler, interest of John K. Lawler (deceased) passed as community property

Filed Nov. 5, 1976, Ser. No. 739,360
Int. Cl.[2] A61C 11/00
U.S. Cl. 32—32 8 Claims



1. A dental articulator having a base member and an overhanging member disposed generally parallel to each other and adjustably spaced apart vertically, each member having attachment means adapted to hold one of a pair of dentures between them in position to effect simulated functional engagement of the pair, at least one of such members having associated means for laterally moving its denture relative to the other denture to test the occlusion of the pair,

said attachment means comprising a pair of generally similar, planar and interchangeable mounts, each adapted to have an upper or lower denture transiently attached adjacent one face thereof, an opposite face of each mount having coupling means for its selective juxtaposition with its respective member, whereby a complementary pair of dentures may be thus disposed in mutual engagement and their occlusion tested by movement of one member and its coupled mount relative to the opposed member and coupled mount, and

a support frame having a longitudinal slideway upon which said base member may be slidably supported for selective retention between lateral guide means disposed along opposite sides of the slideway in position to abut adjacent edges of a mount coupled to the base member; thereby restraining such mount from lateral displacement.

4,164,075
PHONOGRAPH RECORD ECCENTRICITY TESTER

Csaba K. Hunyar, Sunland, Calif., assignor to Capitol Records, Inc., Hollywood, Calif.

Continuation of Ser. No. 431,568, Jan. 7, 1974, abandoned. This application Sep. 15, 1975, Ser. No. 613,637
Int. Cl.[2] G01B 7/00
U.S. Cl. 33—174 Q 1 Claim

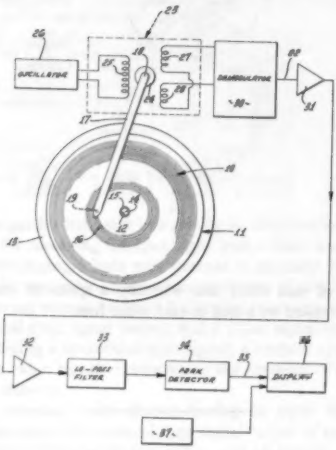
1. In combination, a turntable having a center pin, a phonograph record carried by the turntable with the pin received in the record center pin hole, and a device for measuring the eccentricity of grooving in said phonograph record relative to the record center pin hole, said grooving including spiral grooving and a circular groove extending substantially concentrically but eccentrically about said hole and radially inwardly of said spiral grooving, said device comprising

(a) a single arm having a pivot axis and carrying a stylus the tip of which is spaced from said axis and at all times confined only in said circular groove for tracking therein in response to rotation of the record on the turntable about a turntable axis in registration with said hole, the arm pivoting about said pivot axis to an extent determined by said eccentricity,

(b) sensor means responsive to pivoting of said single arm to produce an AC output signal having an amplitude corresponding to the amplitude of said pivoting, and

(c) circuit means including a digital display for processing said signal to produce a digital read-out corresponding to the peak amplitude of said signal,

(d) said sensor means comprising a rotary variable differential transformer having a rotary core element coupled to said arm to pivot in response to said arm pivoting, said transformer having a primary coil receiving excitation at a carrier frequency and two secondary coils connected in series opposition so that the voltages induced therein are opposite in phase and said output signal represents the difference between said voltage induced in said secondary coils, said primary and secondary coils having fixed, non-



rotating position so that only the core of said sensor means is rotatable,

(e) said circuit means including a demodulator, amplifier, low-pass filter and high and low peak detector means electrically coupled in series relation between the output of said transformer and the input of said display, the detector means detecting high and low AC signal peaks and subtracting same to produce a difference voltage for display, and

(f) there being means connected with the display to hold the display output at an input value for a selected time interval.

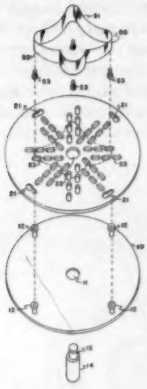
4,164,076
UNIVERSAL DIE MOUNTING PLATE SYSTEM

Robert J. Carrigan, Enfield, Conn., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,399
Int. Cl.[2] B23Q 3/00
U.S. Cl. 33—181 R 5 Claims

1. A mounting plate for securing the position of a machine tool comprising a plurality of slot groupings extending radially from a plate center point, radial axes of each slot group being distributed substantially equiangularly about said centerpoint, each said slot grouping comprising at least two spaced lines of short, spaced slots extending parallel with the respective radial

axis, said slots and spaces being aligned in radial sequence along a respective line and laterally offset by the slot and space



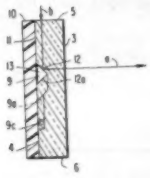
sequence of said other line whereby a space of one line is laterally flanked by a slot in said other line.

4,164,077

LEVEL INDICATING DEVICES

Robert R. Thomas, Hartford, Kans., assignor to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Jul. 7, 1978, Ser. No. 922,763
Int. Cl.[2] G01C 9/32
U.S. Cl. 33—348 **12 Claims**



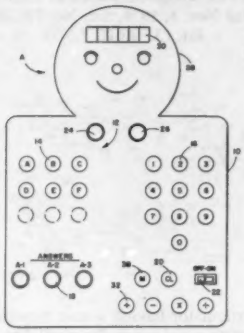
1. In a level indicating device including
body means surrounding a generally arcuate fluid passage means; and
level bubble means contained within said passage means, with said level bubble means including
first liquid means, and
second fluid means defining bubble means within said first liquid means;
the improvement comprising:
at least one surface means having a generally linear cross section and defining a side portion of said passage means;
said surface means being operable to receive light and reflect light therefrom, with
light reflected from said surface means having a generally linear cross section, adjacent said bubble means, defining a visually intensified bubble image.

4,164,078

ELECTRONIC QUIZ APPARATUS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 21, 1978, Ser. No. 879,614
Int. Cl.[2] G09B 7/06
U.S. Cl. 35—9 B **35 Claims**



1. A quiz apparatus comprising:
(a) sheet means having one or more questions and a plurality of answers to the question, said sheet means also having input indicia for an electronic device related to the question and input indicia for an electronic device related to each answer,
(b) a relatively small and portable electronically operable device having a housing,
(c) input means on said housing manually operable for introducing indicia representative of the question and of the answers so that the user may introduce the indicia from the sheet means representative of the question and of a selected one or more of a larger possible number of answers for that question,
(d) electronic processing means associated with the housing being operatively connected to said input means for processing the indicia for the question and for the selected answer in connection with an algorithm, to determine the relationship of the selected answer to the correct answer to the question, and where the correlation of the indicia for the question and the answers thereto are not readily discernible to the user of the apparatus, and
(e) response means to provide an indication to the user of the relationship of the answer selected by the user to the correct answer.

4,164,079

SEAT CUSHION TO PROVIDE REALISTIC ACCELERATION CUES TO AIRCRAFT SIMULATOR PILOT

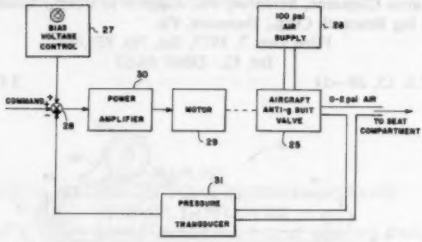
Billy R. Ashworth, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 829,314, Aug. 31, 1977, abandoned. This application Jul. 26, 1978, Ser. No. 928,131
Int. Cl.[2] G09B 9/08
U.S. Cl. 35—12 E **3 Claims**

2. A seat cushion for providing realistic acceleration cues for an aircraft simulator pilot comprising:
a plurality of contiguous seat cushion compartments with each including an air cell having a top surface that is conformable to the pilot's buttocks and having a bottom surface in contact with a noncompressible surface;
means for controlling air pressure changes in each of said air cells to simulate the events which occur in a seat cushion during an actual flight said means including a separate control means for each of said air cells and a computer

means for supplying a command voltage to each of said separate control means;

each of said separate control means including a pressurized air supply with means for controlling the pressure from said air supply to the corresponding air cell said means for controlling the pressure to the air cell includes an aircraft anti-g-suit valve with its normal activating slug replaced



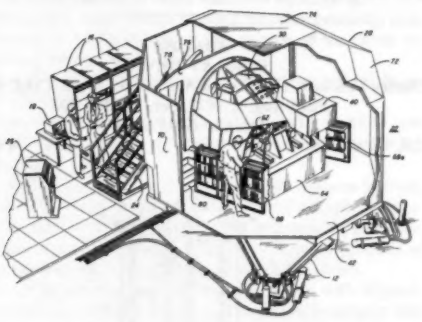
by a motor to provide linear actuation of the valve, the command voltage from said computer means applied to said motor, a pressure transducer means for producing a feedback voltage proportional to the pressure applied to said air cell and means for subtracting said feedback voltage from said command voltage before it is applied to said motor.

4,164,080

BASIC SIMULATOR UNIT

Gerald M. Kosydar, Vestal; Albert J. Rider, Binghamton, both of N.Y., and Alan A. Trussler, Worthing, England, assignors to The Singer Company, Binghamton, N.Y.

Filed May 10, 1977, Ser. No. 795,519
Int. Cl.[2] G09B 9/08
U.S. Cl. 35—12 P **21 Claims**



1. A basic simulator unit for vehicle simulation comprising:

a simulated crew station, the interior of said simulated crew station comprising an enclosed replica of the interior equipment of the crew station of the vehicle being simulated, and the exterior sides of said simulated crew station comprising an open framework which provides direct access to said replicated interior equipment from outside of said simulated crew station without interfering with the environmental fidelity of the interior;

at least one electronics rack adjacent said open framework;

a maintenance walkway bordering said simulated crew station;

an enclosure completely enclosing said simulated crew station, electronics rack and maintenance walkway; and

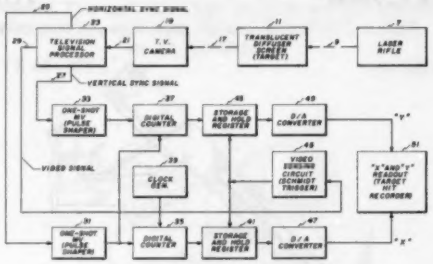
a motion system for supporting and moving said enclosed station, rack, walkway and enclosure.

4,164,081

REMOTE TARGET HIT MONITORING SYSTEM

Herbert Berke, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1977, Ser. No. 850,313
Int. Cl.[2] F41J 5/08
U.S. Cl. 35—25 **16 Claims**



6. A target hit indicator comprising in combination:

means for receiving the laser light from a laser weapon and for producing a light spot thereon in response thereto;

means for scanning a predetermined frame of said laser light receiving means, having a horizontal sync signal output, a vertical sync signal output, and a video signal output, for producing a horizontal sync signal, a vertical sync signal, and a video signal in response to the presence of said light spot thereon;

a first one-shot multivibrator having an input effectively connected to the vertical sync signal output of said predetermined frame scanning means, and an output;

a second one-shot multivibrator having an input effectively connected to horizontal sync signal output of said predetermined frame scanning means, and an output;

a first digital counter having a reset input, a clock input, and an output, with the reset input effectively connected to the output of said first one-shot multivibrator, and with the clock input effectively connected to the output of said second one-shot multivibrator;

a second digital counter having a reset input, a clock input, and an output, with the reset input effectively connected to the output of said second one-shot multivibrator;

a clock signal generator, having an output connected to the clock input of said second digital counter;

a first storage and hold register having a data input, a gating and clearing input, and an output, with the data input effectively connected to the output of said first digital counter;

a second storage and hold register having a data input, a gating and clearing input, and an output, with the data input effectively connected to the output of said second digital counter;

a Schmitt trigger, having an input effectively connected to the video signal output of the predetermined frame scanning means, and an output effectively connected to the gating and clearing inputs of said first and second storage and hold registers;

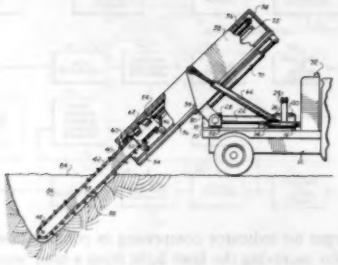
a first digital-to-analog converter having an input connected to the output of said first storage and hold register and an output;

a second digital-to-analog converter having an input connected to the output of said second storage and hold register and an output; and

means having a first input connected to the output of said first digital-to-analog converter, and a second input connected to the output of said second digital-to-analog converter, for reading out an "X" and a "Y" coordinate distance signal simultaneously as a composite combination

thereof which represents the position of said light spot within said predetermined frame.

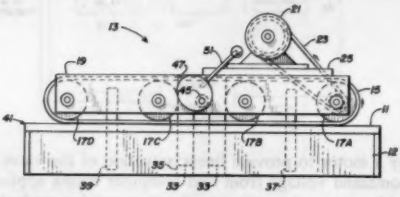
4,164,082
EXCAVATOR FOR ANCHOR HOLES
Gary Q. Watson, P.O. Box F, Del Rio, Tex. 78840
Filed Oct. 11, 1977, Ser. No. 840,972
Int. Cl.[2] E02F *5/06, 3/14*
U.S. Cl. 37—83 **5 Claims**



1. In a machine for digging holes in the ground in which to bury anchors having a rod along a longitudinal anchor axis and an anchor plate projecting outwardly from the anchor rod for impeding longitudinal movement of said anchor when buried,
   a. said machine including a frame on a mobile platform carrying a digger,
   b. said digger including an endless chain-driven bucket rotary trencher;

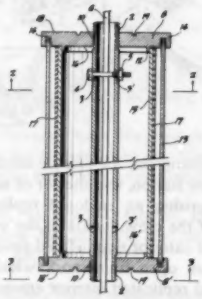
the improved structure comprising in combination with the above:
   c. an intermediate member pivoted to the frame about a frame pivot axis,
   d. said digger pivoted to the intermediate member about a digger pivot axis which is transverse to said frame pivot axis,
   e. digger pivot means interconnecting the digger and the intermediate member for pivoting said digger about said digger pivot axis,
   f. frame pivot means interconnecting the intermediate member with said frame for pivoting the intermediate member about said frame pivot axis,
   g. said frame having
      (i) a front bearing mounted thereon, and
      (ii) a rear bearing mounted thereon,
   h. said digger including
      (i) a digger housing,
      (ii) said trencher being mounted therein,
      (iii) a housing support arm having upper and lower ends and being connected to said digger housing,
   j. said intermediate member including
      (i) a shaft pivot arm,
      (ii) a hydraulic arm,
      (iii) a support pivot arm,
      (iv) a pivot shaft, and
      (v) said pivot shaft extending through and rigidly connected to said shaft pivot arm, said hydraulic arm, and said support pivot arm,
   k. said pivot shaft being journalled within said front and rear bearings thus defining the frame pivot axis,
   m. said digger being pivoted to said intermediate member as defined above by a pivot pin extending through the lower end of said housing support arm and through said support pivot arm with said pivot pin defining the digger pivot axis,
   n. said digger pivot means interconnecting said hydraulic arm and the upper end of said housing arm,
   o. said frame pivot means interconnecting said frame with said shaft pivot arm, and
   p. said digger providing means for digging an anchor hole whereby
      (i) said anchor may be slidably placed within the anchor hole, with
      (ii) the anchor plate bearing against undisturbed earth.

4,164,083
BELT-CONVEYOR IRONING MACHINE
Aaron Glassman, Scranton, Pa., assignor to Pennsylvania Sewing Research Corp., Dunmore, Pa.
Filed Dec. 7, 1977, Ser. No. 858,094
Int. Cl.[2] D06F *69/02*
U.S. Cl. 38—11 **3 Claims**



1. An ironing machine comprising a horizontal ironing plate, an endless-belt conveyor supported above said ironing plate, said conveyor comprising a frame, a plurality of rollers supported on said frame, a continuous belt supported on said rollers and means for driving at least one of said rollers supported on said frame, means on only one side of said conveyor for maintaining said conveyor and said ironing plate in substantially constant horizontal positions relative to one another, while permitting vertical movement of said conveyor with respect to said ironing plate, and means for positioning the endless belt of said conveyor into and out of contact with said ironing plate, said means leaving unobstructed access to the other side of said conveyor when said endless belt is positioned in contact with said plate by said positioning means.

4,164,084
DISPLAY DEVICE
Charles Crockett, 1297 Logan Ave., Costa Mesa, Calif. 92626
Filed Aug. 5, 1977, Ser. No. 821,992
Int. Cl.[2] G09F *3/18*
U.S. Cl. 40—19 **8 Claims**



1. A display device which comprises:
A transparent outer sleeve, a middle sleeve, an inner sleeve fitted with external screw threads on both ends and having at least one passage hole extending perpendicularly through both walls of the inner sleeve, a top and bottom end-plate cap, each having a centralized hole of the same diameter as the inner sleeve, the walls defining such hole being fitted with internal screw threads and each cap

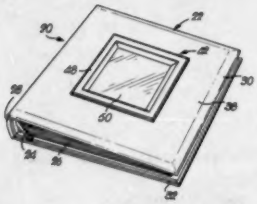
having a groove extending circularly around the inner surface of the cap near the outer edge such that the middle sleeve fits around the inner sleeve and the outer sleeve fits around the middle sleeve and also fits into the groove on both the top and the bottom cap when the caps are screwed onto the threaded ends of the inner cylinder, intercolating and displaying a sheet of schedules, advertising, or other graphics inserted between the middle sleeve and the transparent outer sleeve.

4,164,085

ALBUM HAVING PICTURE RECEIVING FRAME ASSEMBLY IN COVER

William R. Steeb; Robert W. LeVeau, both of Overland Park, Kans., and Michael J. Falck, Peculiar, Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Sep. 14, 1977, Ser. No. 833,239
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—152 **5 Claims**



1. In a photo-album, the combination of a padded, bound cover and picture display frame assembly comprising:

a substantially rigid, planar backing member generally conforming in configuration to that section of the cover receiving the picture display frame.

a layer of resilient foam padding of predetermined thickness on one face of the backing member;

a protective overlay panel secured to said member and extending over said padding in covering relationship thereto;

a photograph receiving tray provided with a planar bottom, a sidewall projecting from said bottom of a height substantially equal to that of the layer and said overlay in combination, and a flange joined to the outer marginal portion of the sidewall and projecting outwardly therefrom,

said overlay and the padding being provided with aligned, blind die cut opening therein of a shape conforming to that of the tray for complementally receiving the same therein and exposing a portion of the backing member,

said tray being telescoped into said openings in the overlay and padding with the bottom engaging and supported by said one face of the backing member and said flange laying against the overlay around the opening therethrough, there being means for securing the bottom of the tray to said backing member and a decorative frame unit having a picture displaying opening therethrough and of a configuration to overlie the side wall of the tray in covering relationship to said flange and engage said overlay,

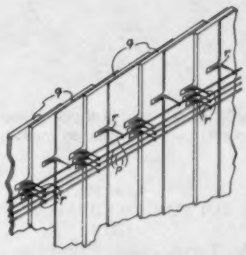
said side wall of the tray and the frame unit being provided with releasably engageable latch elements for removably attaching the frame unit to the tray to permit ready insertion of a photograph in the tray for display thereof behind the frame unit while at the same time allowing easy removal of the photograph as desired by the album user.

4,164,086

RECTILINEAR SLIDING PANEL DISPLAY FOR SUCCESSIVELY EXPOSING DIFFERENT PRINTED PICTURES

Esther Azcaráte de Morgan; David Morgan-Landa, both of Avenida 3 No. 182, Mexico 18, D. F., and José L. Becerra-López, M. Ocaranza No. 107, Mexico 19, D. F., all of Mexico

Continuation of Ser. No. 698,550, Jun. 22, 1976, abandoned, which is a continuation of Ser. No. 492,322, Jul. 26, 1974, abandoned. This application Mar. 20, 1978, Ser. No. 888,134
Claims priority, application Mexico, Jun. 6, 1976, 145143
Int. Cl.[2] G09F *11/20*
U.S. Cl. 40—476 **4 Claims**



1. A rectilinear sliding panel display for displaying a plurality of pictures and/or messages, said display comprising:

(a) a plurality of plate assemblies, each comprising a plurality of plates positioned in parallel vertical planes, one behind the other, wherein said assemblies are positioned adjacent to each other;

(b) a plurality of links, said plurality of links corresponding in number to the plurality of plates, said links being positioned behind the rear face of said plate assemblies, wherein each of said links is coupled to one plate in each of said plate assemblies; and

(c) drive means for sequentially operating said links, said drive means comprising a plurality of stacked rings, each of said rings coupled to one of said links, shaft means for sequentially engaging each of said rings and for rotating said ring in response to the rotation of said shaft means, whereby the rotation of said shaft means rotates one of said rings, thereby linearly moving the link which is coupled thereto, whereby the plates coupled to said link are moved with respect to the other plates in said plate assemblies, the visible plates in said assemblies forming said picture and/or message.

4,164,087

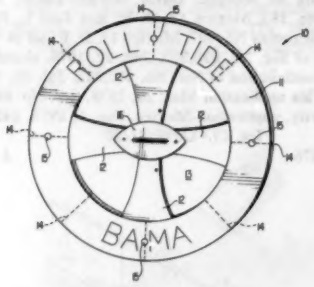
AUTOMOBILE ORNAMENT

Frederick S. Crownover, Rte. 1, Box 27, Columbiana, Ala. 35051

Filed Jun. 9, 1977, Ser. No. 805,148
Int. Cl.[2] G09F *21/04*
U.S. Cl. 40—492 **6 Claims**

1. A hoop-shaped device for displaying information in the form of words or other indicia, comprising: a hoop-shaped member having indicia provided thereon, a plurality of web members extending from said hoop-shaped member across the central open portion of the hoop to intersect at the midpoint of said open portion, a ball-shaped member having the silhouette of a game ball attached at the intersection of said web members, and a plurality of grooves provided at intervals around

the circumference of said hoop-shaped member, whereby pliability of the device is increased and the attachment to a



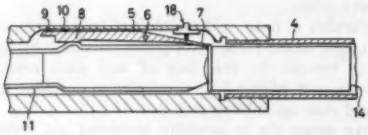
support means facilitated, said grooves extending diametrically across the width of said hoop-shaped member.

4,164,088

CARTRIDGE LOCKING DEVICE FOR AN AUTOMATIC GUN

Hisao Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-ten, Tokyo, Japan

Filed Dec. 14, 1977, Ser. No. 860,603
Claims priority, application Japan, Dec. 29, 1976, 51-159848
Int. Cl.[2] F41C *13/00*
U.S. Cl. 42—17 **1 Claim**



1. In an automatic gun loading operation including a receiver, a carrier pivotally mounted within said receiver, a magazine secured to said receiver for holding cartridges, a barrel chamber attached to said receiver, a breech block located within said receiver and movably displaceable forwardly and rearwardly therein relative to said barrel chamber, and arranged for removing a cartridge from the magazine into said carrier by releasing it from a locked state for firing the gun and for placing the cartridge into said barrel chamber by the upward sway of said carrier which takes place in response to the forward stroke of said breech block, the improvement comprising a cartridge/carrier locking device including a latch plate located within said receiver and having a first claw part at its forward end closer to said barrel chamber for locking the cartridge and a second claw part at its rear end more remote from said barrel chamber for locking said carrier, said latch plate pivotally attached to the inner wall of said receiver, said first and second claw parts serve, respectively, to lock the cartridge and the carrier as they alternately protrude into the interior of said receiver in a swaying fashion, a spring within said receiver arranged to push said second claw part of said latch plate into the interior of said receiver, a locking part arranged at the rear end of said latch plate to engage said breech block, carrier and cartridge to restrict the swaying motion of said second claw part protruding into the interior of the receiver so that the engagement is released to allow the second claw part to act and to release the first claw part from its action only when a retracting stroke of said breech block exceeds a preset value after the gun is fired, said receiver has a hole therethrough from the exterior to the interior thereof aligned with the first claw part of said latch plate, a latch button having a first engaging face and a second engaging face formed in two stages in the axial direction of the hole for engagement with the inner wall of said receiver with said second engaging face located closer to the exterior of said receiver than said first engaging face, and an antirattling spring biasing said latch button toward the outside of said receiver, the swaying movement of said first claw part of said latch plate being mechanically locked when said latch button is pushed inwardly against the force of said antirattling spring and causing said second engaging face to engage with the inner wall of said receiver.

4,164,089

PORTABLE BLIND

Warren T. George, 1611 Clark Ave., Billings, Mont. 59102

Filed Jul. 26, 1977, Ser. No. 819,048
Int. Cl.[2] A01M *31/02*; E04G *11/04*
U.S. Cl. 43—1 **10 Claims**

1. A blind of the type operable to the facilely transported by a user comprising:

a first frame means, having

a first set of at least three legs extending generally upon an imaginary semicircle at the base thereof

first semicircular frame means interconnecting the upper ends of said legs such that said legs may be self-supporting in an upright posture,

second semicircular frame means positioned above said first semicircular frame means, and generally vertical frame means connected at the respective ends of said first and second semicircular frame means to form one-half of a generally cylindrical frame extension above said at least three legs forming one-half of a truncated conical frame;

a second frame means, having

a second set of at least three legs extending generally upon an imaginary semicircle at the base thereof,

third semicircular means interconnecting the upper ends of said legs such that said legs may be self-supporting in an upright posture, where

fourth semicircular frame means positioned above said third semicircular frame means, and

generally vertical frame means connected at the respective ends of said third and fourth semicircular frame means to form one-half of a generally cylindrical frame extension above said at least three legs forming one-half of a truncated conical frame; where

said first frame means and said second frame means may be operably positioned such that said first, second, third and fourth semicircular frame means form a cylinder and said first frame means and said second frame means forms a generally truncated conical structural shell;

first flexible cover means connected to said first frame means for extending about and forming a first covering shell over said first frame means;

second flexible cover means connected to said second frame means for extending about and forming a second covering shell over said second frame means;

said first flexible means connected to said first frame means

and said second flexible means connected to said second frame means operably serve to form a blind enclosure about a user when said first and second frame means are positioned to form an enclosed shell whereby one-half of said enclosed shell may be facilely bumped away by a user.

4,164,090

ASSEMBLY KIT FOR ASSEMBLING A TOY VEHICLE

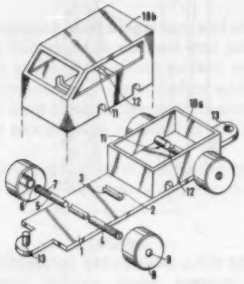
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3 (Tumlingen), Fed. Rep. of Germany

Filed Jul. 13, 1977, Ser. No. 815,410

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 7622810

Int. Cl.[2] A63H *33/06*

U.S. Cl. 46—17 **7 Claims**



1. An assembly kit for assembling a toy vehicle having tires, comprising a lower part including a body portion having an upper surface, a plurality of elongated undercut projections located on said upper surface of said body part and each extending in a first direction, each of said projections having a slot which cuts through and extends in the direction of elongation of a respective projection, and a plurality of pairs of elongated axle portions for mounting the tires thereon, said axle portions being mounted on said upper surface of said body portion and also extending in said first direction, said projections and said axle portions being of one piece with said body portion so as to form together a one-piece member defining said lower part; and a hollow body part including at least two hollow upper structural elements each having a shape corresponding to the shape of a toy vehicle to be assembled, each of said upper structural elements having a lower surface provided with elongated undercut grooves which extend in said first direction and each have two enlarged end portions spaced from one another in said first direction, each of said enlarged end portions having a length corresponding to a part of the length of a respective undercut groove, and a width corresponding to the largest cross-section of said undercut projections of said lower part, whereby each of said structural elements of said upper part can be connected with said lower part by movement of said structural element both in said first direction and in a direction transverse to said first direction so that the undercut projection of said lower part engages in the undercut groove of the structural element of said upper part.

4,164,091

BUILDING BLOCKS SET

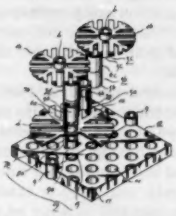
Wen-ping Lin, 30, Chien-Yung St., Taichung, Taiwan

Filed Mar. 30, 1978, Ser. No. 891,717

Int. Cl.[2] A63H *33/04*

U.S. Cl. 46—26 **2 Claims**

1. A set of building blocks comprises a plurality of building elements including branching elements having a central hole therein, a twin plug and socket member, a single hollow pluug and socket member, and a cylindrical connector; and several base boards having a plurality of socket-recesses countersunk into the top surface thereof and protrusions extending from the bottom surface thereof, wherein said base boards are provided with several semi-annular recesses countersunk into the side walls of the top surface thereof so as to form correspondingly semi-annular protrusions extending from edges of the bottom surface thereof, and provided with four quarter-annular recesses countersunk respectively into each corner of the top surface thereof so as to form correspondingly four quarter-annular protrusions extending from corners of the bottom surface thereof, whereby the semi-annular recesses and the quarter-annular recesses of different base boards can cooperate each other to define suitable recess combinations, said cylindrical connector can be engaged into the recess combinations so as to couple said base boards side by side.



4,164,092

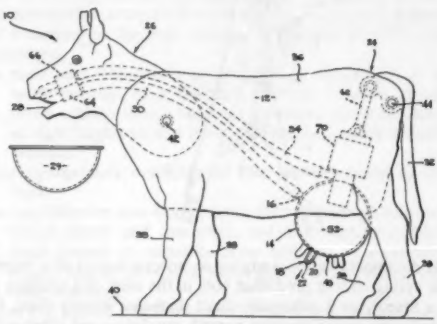
TOY MILKABLE ANIMAL FIGURE

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356; Erwin Benkoe, deceased, late of Encino, Calif. (by Elisabeth Benkoe, executrix), and Elonne Dantzer, Hermosa Beach, Calif., assignors to A. E. Goldfarb, Northridge, Calif.

Filed Feb. 25, 1977, Ser. No. 772,012

Int. Cl.[2] A63H *13/02*

U.S. Cl. 46—123 **19 Claims**



1. A toy milkable animal figure comprising:

(a) a frame representative of an animal figure,

(b) a chamber for liquid supported on said frame and representing the udder of the animal,

(c) means on said frame connected to and defining an inlet to said chamber for the introduction of liquid into said chamber,

(d) means on said frame connected to and defining an outlet from said chamber, said outlet means defining an openable aperture,

said udder being flexible and manually squeezable to cause the release of liquid through said aperture,

(e) and means providing a coloring agent in said chamber for changing the color of clear liquid such as water introduced into said chamber to a milky color.

19. A liquid drinking and discharging toy animal apparatus, said apparatus comprising:

(a) a body having front and rear ends and a shape and design to characterize an animal;

(b) a head mounted at the front end of said body and having a mouth opening for the intake of a liquid;

(c) a liquid receiving chamber supported at the rear end of said body and having a portion extending outwardly from said body, said portion being representative of an udder of said animal and being flexible and manually squeezable to discharge liquid from said chamber through an openable aperture therein;

(d) an inlet tube extending from said mouth opening to said chamber for introducing liquid into said chamber;

(e) and separate pumping means operatively connected to said chamber and having an actuator member movably mounted on said body and having a portion located externally of said body, said portion externally of said body being manually movable relative to said body independently of movement of said body from externally of said body for pumping liquid through said mouth opening and inlet tube into said chamber.

4,164,093

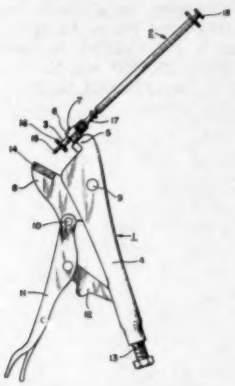
MINI-INJECTOR

John P. Sterrett, Walkersville; Joseph P. Carroll, Frederick, and Richard A. Creager, Walkersville, all of Md., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 30, 1978, Ser. No. 873,573

Int. Cl.[2] A01G *29/00, 7/06*

U.S. Cl. 47—57.5 **1 Claim**



1. An apparatus for wedging an injector barrel of a disposable syringe into a predrilled hole in the stem of a seedling or in a branch of a relatively small diameter woody plant for introducing under pressure growth regulators and other solutions into the stem or branch comprising:

(a) a locking-type wrench having a handle member provided with a fixed jaw, a movable jaw pivotally attached to the handle member for coaction with the fixed jaw, means for adjusting the position of said fixed and movable jaws with respect to each other, and means for locking said fixed and movable jaws onto the foresaid stem or branch, the fixed jaw of said wrench being about one-half the length of the movable jaw and being provided with means for mounting an injector barrel;

(b) an injector barrel for a disposable syringe mounted to said fixed jaw;

(c) a tapered tip integrally joined to said injector barrel, said tip having a taper length of 2.4 mm and a taper angle of 40° to provide an effective pressure tight leakage preventative seal in a predrilled hole having a diameter of 5/64 inches, said seal being capable of preventing leakage at pressures up to 400 p.s.i.;

(d) a disposable syringe mounted in the foresaid injector barrel.

4,164,094

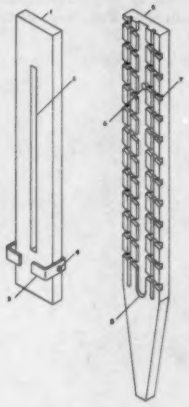
ADJUSTABLE PLANT SUPPORT

Dorothy E. Kempka, 28305 SE. 61st St., Issaquah, Wash. 98027

Filed Jul. 7, 1977, Ser. No. 813,482

Int. Cl.[2] A01G *17/06*

U.S. Cl. 47—47 **2 Claims**



1. An adjustable plant support, comprising

first and second members adapted for abutment along respective inner faces, the first member including means for securely positioning the first member with respect to the ground and at least one of the members including channel means forming a plurality of transverse channels intersected by at least one longitudinal channel in such member's inner face for preventing moisture buildup and retention between the members; and

adjustment means for securing the members in a plurality of relative, abutting positions such that the members are adjustable in position with respect to each other.

4,164,095

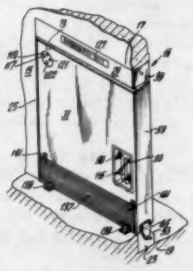
EMERGENCY ESCAPE WALL STRUCTURE

John Musacchia, P.O. Box 452, Marathon, Fla. 33050

Filed May 1, 1978, Ser. No. 901,448

Int. Cl.[2] B24B *25/00*

U.S. Cl. 52—1 **10 Claims**



1. An emergency escape wall structure situated between two side frames, a header frame and a sill frame, said structure comprising:

a top panel rigidly mounted between the two side frames and

the head frame, said top panel having a bottom member with a recess therein;

a bottom panel rigidly mounted between the two side frames and the sill frame;

an escape panel having an inside sheet and having a top member with a slot therein, said slot being aligned with the recess in the bottom member of the top panel, said escape panel having a lower edge adjacent said bottom panel;

hinge means mounted at the lower edge of the escape panel for pivotably mounting said escape panel between said side frames and said top panel and said bottom panel, said hinge means being adapted to permit said escape panel to pivot outwardly and downwardly;

a plunger lock slidably mounted within said escape panel to move in and out through the slot in the top member of the escape panel into the recess of the bottom member of the top panel;

spring means engaging said plunger lock and adapted to urge said plunger lock through said slot into said recess, said plunger lock having an inclined surface and said recess having a corresponding inclined surface whereby pressure on the inside sheet of the escape panel causes a downward force on the plunger lock opposed to the spring means; and

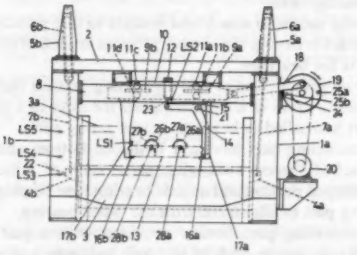
means for releasing the force of said spring means to cause said plunger lock to drop out of said recess.

4,164,096

RECIPRO-FINISHING METHODS AND MACHINES

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Tipton, Nagoya, Japan

Filed May 27, 1977, Ser. No. 801,406
Claims priority, application Japan, Jul. 22, 1976, 51/97785[U]
Int. Cl.[2] B24C *31/00, 1/00*
U.S. Cl. 51—7 **10 Claims**



1. A recipro-finishing method for finishing workpieces having a curved profile, comprising:

mounting the workpieces on mounting members which are pivotable around axes substantially coincident with the centers of curvature of the workpieces;

moving the mounting members and a mass of finishing medium relatively to each other for immersing the workpieces in the finishing medium; and

linearly reciprocating the mounting members with the workpieces thereon in the finishing medium in a direction transverse to said axes and simultaneously rocking the mounting members back and forth around the pivoting axes thereof for moving the workpieces substantially along the curvature thereof.

4. A recipro-finishing apparatus for surface finishing workpieces having a curved profile, comprising:

a carrying means having a plurality of workpiece mounting members thereon on which the workpieces can be mounted, said workpiece mounting members being mounted on said carrying means for pivotal movement around axes substantially coincident with the center of curvature of the workpieces when they are mounted on said workpiece mounting members,

reciprocating means connected to said carrying means for reciprocating said carrying means linearly in a direction transverse to said axes,

rocking means connected to said workpiece mounting members for rocking said workpiece mounting members back and forth around said axes during the linear reciprocation of said carrying means, and

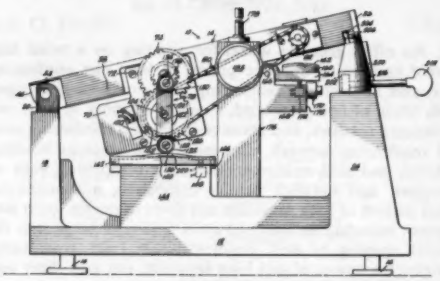
a finishing medium container for holding a mass of finishing medium and moving means connected to said finishing medium container for moving said finishing medium container toward and away from said carrying means for immersing the workpieces carried by said carrying means in the finishing medium during reciprocation and rocking of the workpieces.

4,164,097

OPTICAL LENS GRINDER DEVICE

Walter Hernandez, 4650 E. 10 Ct., Hialeah, Fla. 33013

Filed May 8, 1978, Ser. No. 903,701
Int. Cl.[2] B24B *9/14*
U.S. Cl. 51—101 LG **31 Claims**



1. A cycling device for sequentially positioning a work carriage relative to a pair of work stations from a start position and returning to the start position at the end of each cycle comprising,

a main base including a pivotal, sliding connection to the work carriage to permit said carriage to pivot up and down relative to said base and to reciprocate in directions at right angles to said pivot movement, a predetermined amount,

an appropriately configurated cam plate mounted to said base,

a cam follower arm having oppositely extending ends positioned above said cam plate, and drive means centrally fixed thereto to rotatably drive said arm at a predetermined rate of speed, said drive means being fixed to said work carriage,

first and second cam followers carried at the respective ends of said arm, each portion of said arm from said drive means connection being of a predetermined length so as to permit its associated cam follower to engage said cam plate for a predetermined portion of each revolution to cause an up and down pivotal movement of said carriage about said connection,

said first cam follower being angled relative to a plane of rotation of said arm in a manner so as to permit it to track angularly across said cam plate in a first direction, when engaged therewith, to laterally slide said carriage into a position to align a piece of work carried by said work carriage with a first of said work stations at the beginning of said down movement,

said second cam follower causing said up movement during a first portion of said cam plate engagement and being angled relative to the plane of rotation in a manner so as to cause it to track across said cam plate in a second direc-

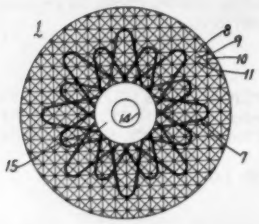
tion, when engaged therewith, to laterally slide said carriage to align the piece of work with a second of said pair of work stations.

4,164,098

GRINDING WHEEL

Hiroshi Akita, 549 Banchi, Oaza Nishi, Kamioka-cho, Yoshiki-gun, Gifu Prefecture, Japan

Filed Sep. 13, 1977, Ser. No. 832,913
Claims priority, application Japan, Sep. 13, 1976, 51-123883
Int. Cl.² B24D *7/04*
U.S. Cl. 51—209 R **5 Claims**



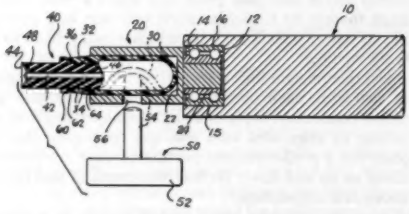
1. An offset grinding wheel for grinding on a radial face thereof comprising abrasive grains, at least one reinforcing core, said at least one reinforcing core comprising an open mesh fabric of fibreglass cord, a central opening, at least one reinforcing network, said abrasive grains and reinforcing core and reinforcing network all bonded in a resinous bonding material, and said reinforcing network comprising yarn of fibreglass, said network further comprising a symmetrical radial pattern of long segments and short segments, each said segment including an apex and arms, said arms tangent to the central opening of said grinding wheel, said arms being straight, the apices of said long segments and said short segments diametrically apposed, said long segments equal to approximately eighty percent of the radius of said grinding wheel, said short segments equal to approximately sixty percent of the radius of said grinding wheel.

4,164,099

CONTACT LENS TOOL

Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20015

Filed Feb. 10, 1978, Ser. No. 876,985
Int. Cl.² B24B *41/06, 47/00*
U.S. Cl. 51—216 LP **12 Claims**



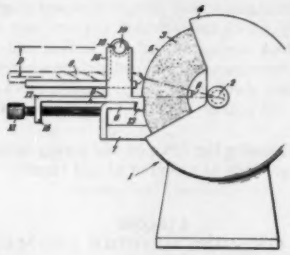
1. A tool for holding a contact lens during grinding or polishing, comprising a handle, a hollow rigid receptacle open at one end and having its other end rotatably mounted in the handle, an elastomeric fluid chamer having a deformable wall and being glove-fitted into said receptacle, said fluid chamber being completely closed except for an open end protruding from said open end of the receptacle, lens seating means on the open end of said fluid chamber for supporting a lens during grinding or polishing and provided with a passage for communicating the interior of said fluid chamber with the atmosphere, and an opening through the wall of said receptacle intermediate of its ends permitting the exercise of pressure against the deformable wall of said chamber to compress the fluid chamber and partially evacuate the same, thereby enabling suction securement of a lens against said lens seating means.

4,164,100

DEVICE FOR GRINDING SPIRAL DRILLS

Robert Wolff, Im Kiesacker, 5466 Engeln, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,676
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632034
Int. Cl.² B24B *3/30*
U.S. Cl. 51—239 **2 Claims**



1. An auxiliary device to facilitate re-grinding of spiral drills on the surface of a grinding wheel of a grinding machine having a grinding table adjacent to the wheel comprising:

a supporting bracket having two upwardly directed prong parts which is adapted to be detachably mounted on said grinding table;

fastening means to attach said bracket to said grinding table;

said bracket having supporting grooves in each of said prong parts for bearings;

said two prong parts of said supporting bracket facing each other to serve as aligned supports for axles of a swiveling part journalled in bearings in said prong parts;

said swiveling part having a U-shaped bottom and having attached thereto two wing parts, each of which has a U-shaped portion and an axle bearing, one bearing in each wing part in alignment with the other bearing;

said swiveling part further provided with a pair of axle journals, one in each of said axle bearings, and also provided with an elongated handle part lying below and between said axle journals;

a groove in said elongated handle part of said swiveling part being adapted for holding the drill workpiece to be ground so that the drill resting on the groove lies below said axle journal;

said groove in said handle part being slantingly directed towards the surface of the grinding wheel with the swiveling axis of said swiveling part lying in a horizontal plane;

said swiveling axis of said swiveling part being inclined at a predetermined acute angle to the shaft of the grinding wheel, said acute angle being inclined in the same slanting direction as the axis of said groove in said swiveling part;

said swiveling part being swivelable up and down to precisely align the drill in a resting position on the groove while being reground by the grinding wheel; and

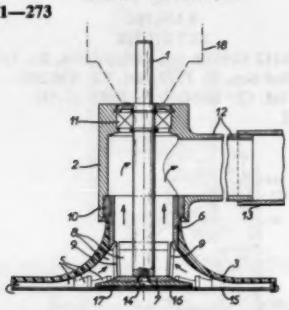
a plurality of interchangeable swivelable parts being provided which differ from each other in the distance between the bottom of the receiving grooves and the height of the swiveling axis extending to the mid-point of the grooves in the prongs of the supporting bracket.

4,164,101

SANDING HEAD INCLUDING A DUST EXTRACTING SHAFT CASING

Jean Robert, Paris, France, assignor to La Francaise Metallurgie, Paris, France

Filed Mar. 17, 1978, Ser. No. 887,598
Claims priority, application France, Mar. 18, 1977, 77 08135
Int. Cl.[2] B24B 55/06
U.S. Cl. 51—273 7 Claims



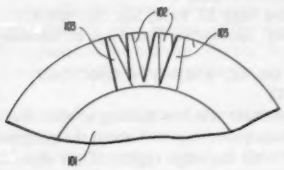
1. In a sanding head providing for the extraction of dust produced during sanding, and comprising a shaft casing, a shaft rotatably mounted in the casing and capable of being driven by motor means, a circular backing plate of a ventilated type which is connected to one end of the shaft, said circular backing plate being provided in its front face with ventilating grooves and having in its center a hollow cylindrical element, which has a closed front end and which is provided, adjacent its closed front end, with lateral windows communicating the inside of the hollow cylindrical element with the ventilating grooves, and means for detachably fixing an abrasive disk to the closed front end of the hollow cylindrical element, the improvement consisting in that: the hollow cylindrical element of the backing plate is rotatably mounted in the shaft casing at one end thereof, whereas the shaft is rotatably mounted only at the other end of the casing; the shaft, on the one hand, and the casing and the hollow cylindrical element of the backing plate, on the other hand, have respective diameters selected to provide a wide space therebetween; and the shaft casing comprises between its two ends a lateral dust outlet pipe for connection to a vacuum cleaner.

4,164,102

PROCESS FOR THE MANUFACTURE OF A CERAMIC AXIAL TURBINE WHEEL

Walter Lohrum, Aichwald, and Eberhard Tiefenbacher, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 26, 1977, Ser. No. 762,520
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603226; Jun. 18, 1976, 2627309
Int. Cl.[2] B24B 1/00
U.S. Cl. 51—283 R 13 Claims



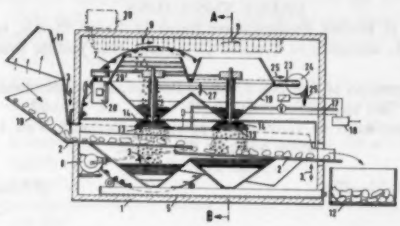
1. A method for the manufacture of a twisted blade ceramic turbine wheel having a hub and a plurality of blades by erosion of a single ceramic mass with the aid of profiling tool means matched to the desired profile shape, comprising the steps of eroding the pressure and suction profile surfaces on the blade profile successively by tool means including the steps of aligning the tool means with respect to the ceramic mass so as to be in alignment with straight lines defining one of pressure and suction profile surfaces of a blade to be formed, moving a respective tool means initially along inclined straight lines with an orientation between the workpiece and the tool means corresponding to an inclination required to generate a desired first of said profile surfaces, realigning said tool means with respect to said ceramic mass so as to be in alignment with straight lines defining the other of said profile surfaces, and thereafter moving a respective tool means along other inclined straight lines with an orientation between the workpiece and the tool means corresponding to an inclination required to generate the other of the desired profile surfaces.

4,164,103

DEVICE FOR DEBURRING WORKPIECES

Jürgen Hesse, Düsseldorf, and Peter Grund, Solingen, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 17, 1977, Ser. No. 842,512
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1976, 2650202
Int. Cl.[2] B24B 3/14, 5/06
U.S. Cl. 51—417 1 Claim



1. In a device for deburring workpieces of rubber or plastic or the like wherein the workpieces traverse an insulated chamber on a transport arrangement and are struck by high kinetic energy blasted granulated material from a centrifugal fan blower, as well as made brittle by the addition of a low boiling liquefied gas, the improvement being said centrifugal fan blower having a vertical rotation axis and being mounted above the transport arrangement to blast the granulated material out in horizontal direction, a conical deflector collar ring having its cone angle opening facing downward being mounted about said centrifugal fan blower in a blasting plane, said transport arrangement comprising a vibratory trough mounted within said chamber, said low boiling liquefied gas being discharged through feed means mounted at said fan blower for the simultaneous cooling and blasting of the workpieces, and said gas feed means being a circular pipe mounted onto the lower edge of said deflector collar ring with spray nozzles for the liquefied gas which are aimed downward onto the workpieces.

4,164,104

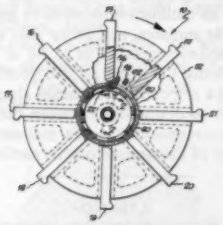
APPARATUS AND METHOD FOR OBTAINING A SHORTENED BLAST PATTERN WITH A CENTRIFUGAL THROWING WHEEL

James H. Carpenter, and Donald G. Corderman, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,302
Int. Cl.[2] B24C 5/06
U.S. Cl. 51—432 4 Claims

1. In a centrifugal throwing wheel, the combination of a rotatable runnerhead, a plurality of throwing vanes carried by

said runnerhead, and an impeller having impeller vanes for causing blast media to be deposited on said throwing vanes during rotation of said runnerhead for causing said blast media to be thrown from said throwing vanes in a blast pattern, said impeller also having attachment means for attaching said impeller to said runnerhead, the improvement characterized by

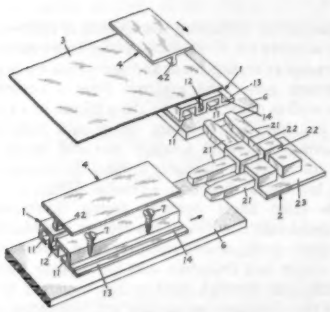


said attachment means comprising means for attaching said impeller to said runnerhead in a preselected one of a plurality of positions for selectively varying the shape of said blast pattern, said attachment means including index means for locating said impeller vanes in a lagging position relative to the throwing vanes.

4,164,105
FRAME STRUCTURE

Walter B. Herbst, Evanston, and Ralph M. Lazar, Skokie, both of Ill., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation of Ser. No. 534,876, Dec. 20, 1974, abandoned. This application Aug. 19, 1976, Ser. No. 715,692
The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.
Int. Cl.[2] E06B *3/26*
U.S. Cl. 52—202 **10 Claims**



1. In kit form for assembly as a rectilinear film supporting frame structure, component parts consisting of

(a) at least four extruded rigid frame members each having an upper open longitudinal channel extending the length thereof and communicating with the upper surface of the frame member, each frame member also having lower longitudinal channels communicating with both ends thereof;

(b) four corner brackets for joining the frame members, each corner bracket having prongs projecting from two sides thereof at right angles and designed to securely mate with the lower longitudinal channel opening in the frame member components, the upper surface of each corner bracket having intersecting upper open channels extending across said surface, and aligned with the upper open longitudinal channels of the frame members when mated;

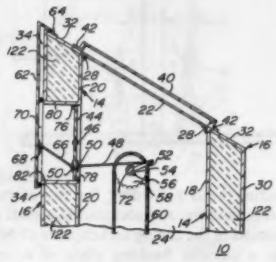
(c) a thin flexible film of dimensions which are at least coextensive with those of the mated corner brackets and frame members; and

(d) at least four extruded rigid interlocking tee-members for securing the edges of said thin flexible film within the upper open longitudinal channels of the frame member and the corner bracket components in the mated position.

4,164,106
SKYLIGHT

Gustav Klosz, 1112 Griffith St., Philadelphia, Pa. 19111

Filed Sep. 26, 1977, Ser. No. 836,263
Int. Cl.[2] E04B *7/16*; E05F *17/00*
U.S. Cl. 52—72 **8 Claims**



1. A ventilating structure for covering a skylight opening in a building roof or the like, comprising:

inner and outer substantially co-extensive frames forming spaced, paired walls, each of said frames having four vertical walls and a window panel secured to top edges of the inner walls, and having substantially co-extensive openings in at least one pair of said spaced walls;

inner and outer doors hingeably mounted on said at least one pair of spaced walls respectively to close said openings or to provide ventilation therethrough;

means for opening and closing said inner door from within said building;

linkage means for operably connecting said outer door to said inner door, so that said doors open together and close together;

means for sealing said inner and outer doors against said at least one pair of spaced walls when said doors are closed; and,

insulation substantially filling all spaces between said inner and outer frames, except between said openings and between said window panels.

4,164,107
FIRE-PROOF WINDOW

Franz Kraemling, Aachen; Norbert Bartonitscheck, Stolberg; Günther Mattes, Richterich, and Jakob Nieven, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

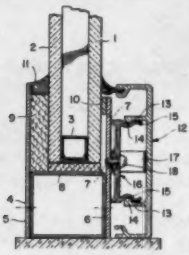
Filed May 22, 1978, Ser. No. 908,017
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746243
Int. Cl.[2] E04B *1/94*; E04C *2/02*
U.S. Cl. 52—232 **15 Claims**

1. In a fire-resistant window having at least one glass sheet mounted in a main frame disposed about the peripheral edge of the glass sheet with the edge region of the sheet on the side thereof to be exposed to the heating effect of fire being at least partially exposed and free of frame structure, the improvement comprising:

(a) cushion frame means disposed over said edge region and connected to said main frame and having openings therethrough exposing the edge region of the sheet;

(b) listel means disposed over said cushion frame means and covering said openings;

(c) connection means for attaching said listel means to said cushion frame means, said connection means being disposed between said cushion frame means and said listel



means; and being responsive to the heat of fire to soften and lose its attaching function; and

(d) ejection means disposed between said listel means and cushion frame means for detaching and removing said listel means from said cushion frame means when said connection means loses its attaching function.

4,164,108

FIRE-PROOF WINDOW

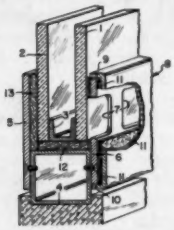
Günther Ortmanns, Aachen, Fed. Rep. of Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 22, 1978, Ser. No. 908,018

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731979

Int. Cl.[2] E04C *2/02*; E04B *1/94*

U.S. Cl. 52—232 **9 Claims**



1. In a fire-resistant window having at least one glass sheet mounted in a main frame disposed about the peripheral edge of the glass sheet with the edge region of the sheet on the side thereof to be exposed to the heating effect of fire being at least partially exposed and free of frame structure, the improvement comprising:

(a) cushion frame means disposed over said edge region and connected to said main frame and having openings therethrough exposing the edge region of the sheet;

(b) listel means attached over said cushion frame means and covering said openings; and

(c) ejection means disposed between said listel means and cushion frame means, said ejection means being responsive to the heat of fire to detach and remove said listel means from said cushion frame means.

4,164,109

METHOD AND DEVICE FOR A TIGHT PACKING UNDER A THERMOPLASTIC AND THERMOFORMABLE FILM OF PRODUCTS REQUIRING AN ABSOLUTE PROTECTION

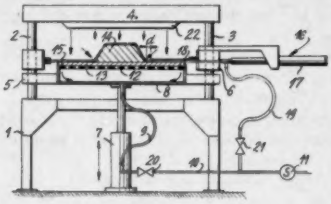
Jacques R. N. Dubois, 31, rue Jouvenet, 75016 Paris, France

Filed Dec. 27, 1977, Ser. No. 864,628

Claims priority, application France, Oct. 24, 1977, 77 31938

Int. Cl.[2] B65B *31/04*

U.S. Cl. 53—427 **6 Claims**



1. A method for tight packaging an article under a thermoplastic and thermoformable film comprising the steps of:

placing an air-tight support on an apertured plate of a chamber and evacuating the chamber whereby the support is firmly applied onto the plate,

positioning the article to be packaged on the support,

placing a thermoplastic and thermoformable film in an upright sliding position in proximity to the top of the article,

providing at least one suction nozzle between the support and the film,

connecting said suction nozzle to a vacuum source,

heating the film while simultaneously causing the film and the nozzle to be displaced in unison parallel to the support towards the article until the film engages the article and tightly wrap the article and the suction nozzle on the support,

removing said suction nozzle from between the support and the film,

and disconnecting said nozzle from the vacuum source.

4,164,110

METHOD FOR FIXING PROTECTIVE SHEETS ABOUT ROLLS OF MATERIAL

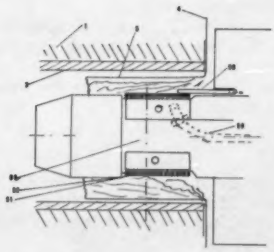
Michel Soubeyrat, Residence Duplessis, 38300 Bourgoine-Jallieu, France

Filed May 19, 1977, Ser. No. 798,630

Claims priority, application France, May 19, 1976, 76 15858

Int. Cl.[2] B65B *25/24*

U.S. Cl. 53—409 **5 Claims**



1. In a method of fixing a protective cover sheet around a roll of material such as carpet, fabric, or the like, where such roll is formed around a carrier tube having a longitudinal bore and wherein the cover sheet has a width sufficient that the marginal end portions thereof cover the ends of the roll, the improvement comprising the steps of:

inserting the marginal end portions of the cover sheet into the bore;

introducing into the bore expansion means carrying a gripping element, the gripping element comprising a metal strip having first and second ends and being wound in at least two successive turns to form a spiral having a substantially circular cross-section, the gripping element being radially expandable by application of an internal force thereto to any size within a range of diameters ranging from a first chosen diameter to a second diameter equal to the diameter of the bore, the gripping element being at the first diameter when introduced into the bore; and

expanding said expansion means from engagement with the gripping element at the first diameter to engagement at a diameter approximately equal to the second diameter whereby the gripping element firmly urges and holds the marginal end portions of the material against the inner wall of the bore.

4,164,111

VACUUM-PACKING METHOD AND APPARATUS

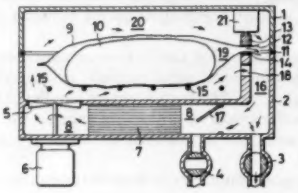
Pietro Di Bernardo, via Falk 3, Milan, Italy

Filed Nov. 17, 1977, Ser. No. 852,578

Claims priority, application Italy, Nov. 19, 1976, 29595 A/76

Int. Cl.[2] B65B *31/02*

U.S. Cl. 53—434 **7 Claims**



1. A method for packaging under vacuum a product inside a bag comprising the following steps:

(a) arranging the bag made of heat-sealable material containing the product inside a treatment chamber that can be closed in an airtight manner;

(b) closing said treatment chamber;

(c) causing preheated hot air to circulate in said chamber under forced draft, said air being heated by means in said chamber;

(d) evacuating said hot air to outside the chamber and thus outside the bag so as to create an environment under vacuum;

(e) sealing the aperture of the bag;

(f) re-establishing pressure in the treatment chamber by the introduction of outside air over the heating means thereby heating the introduced air; and

(g) opening the chamber and removing the vacuum-packaged pack obtained.

4,164,112

BLADE ASSEMBLY FOR LAWN MOWERS

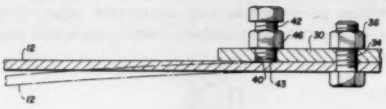
Harold P. Jackson, McDonough, and Clifford H. Boylston, Conyers, both of Ga., assignors to McDonough Power Equipment, Inc., McDonough, Ga.

Filed Nov. 25, 1977, Ser. No. 854,539

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—295 **16 Claims**

1. In a lawn mower having a blade assembly including a cutting blade and a blade mounting means for mounting and rotating the blade in a generally horizontal plane; the improvement comprising means mounted on the blade assembly for applying a force to the blade in a direction generally normal to the general horizontal plane of the blade for prestressing the



blade and for deforming the blade to adjust the position of the blade relative to the blade mounting means.

4,164,113

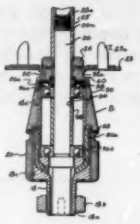
SPINDLE DRIVE ADAPTER

N. H. Thompson, Anderson, S.C., assignor to Superior Bands, Inc., Anderson, S.C.

Filed Aug. 28, 1978, Ser. No. 937,542

Int. Cl.[2] D01H *1/26, 7/04*

U.S. Cl. 57—104 **4 Claims**



1. Textile twisting machine apparatus of the type having belt driven spindles mounted on a frame, each said spindle including a bearing block base adapted for affixation to said frame having a central bearing bore, a driven rotatable spindle shaft received in said central bearing bore and held therein in an upright manner relative to said frame, said bearing block base having a lower diameter portion about which an idler pulley is rotatably carried and an upper diameter portion extending above said idler pulley, wherein the improvement comprises:

an adapter drive pulley member for increasing the rotational drive speed of said spindle shaft including;

a central opening in the top portion of said adapter pulley member for receiving said spindle shaft,

a lower base portion corresponding in diameter generally to that of said idler pulley,

a reduced diameter drive pulley portion having a groove for receiving a drive belt of said machinery apparatus,

a tapered drive belt transfer surface extending upwardly from said lower base portion tapering inwardly terminating at said drive pulley portion facilitating transfer of said drive belt between said idler pulley and reduced drive pulley portion; and

said adapter pulley member being carried for unitary rotary motion with said spindle shaft and adapted for being disposed over said upper diameter portion of said bearing block base with lower base portion adjacent said idler pulley.

4,164,114

HIGH STRENGTH POLYESTER FIBROUS PRODUCTS

Kazuyuki Yabuki, and Mitsuo Iwasaki, both of Otsu, Japan, assignors to Toyobo Petcord, Co., Ltd., Japan

Filed Apr. 18, 1978, Ser. No. 897,480

Claims priority, application Japan, Apr. 18, 1977, 52/44824

Int. Cl.[2] D02G *3/48*

U.S. Cl. 57—236 **12 Claims**

1. A high strength polyester fibrous product reduced in heat build-up and improved in durability and useful for reinforcing

rubber materials, which is prepared by twisting drawn yarns obtained by melt spinning a polymeric composition comprising polyethylene terephthalate as the main polymer component and at least one methylene group-containing polyester in such an amount that the proportion of the total number of methylene groups to the total number of terephthalic acid residues in all the polymer components is more than 2.0 and less than 2.5,

the polyester having a glass transition temperature lower than that of the polyethylene terephthalate and being selected from the group consisting of (i) polyalkylene terephthalates wherein the aklylene unit is a straight chain having 3 to 8 carbon atoms, (ii) polyalkylene isophthalates wherein the alkylene unit is a straight chain having 2 to 6 carbon atoms and (iii) aliphatic polyesters wherein the number of the methylene groups between two ester linkages is from 2 to 10,

and drawing the resulting as spun yarns, and having the following melting point (Tm):

$$Tm\ pet \geqq Tm \geqq Tm\ pet - 10^\circ C.$$

(wherein Tm pet is the melting point of the polyethylene terephthalate) and the following peak temperature (Tα) of the main absorption appearing in the temperature distribution of the mechanical loss tangent when heat treated in the air at 240° C. for 2 minutes while keeping a constant length after the drawing:

$$T\alpha\ pet - 2^\circ C. \geqq T\alpha \geqq T\alpha\ pet - 20^\circ C.$$

(wherein Tα pet is the peak temperature of the main absorption of the yarns made of polyethylene terephthalate alone drawn and heat treated under the same conditions as applied to the said as spun yarns made of the polymeric composition).

4,164,115

PNEUMATICALLY OPERATED YARN THREADING MECHANISMS FOR TEXTILE YARN PROCESSING MACHINES

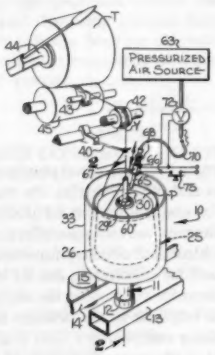
Gustav Franzen, Willich, Fed. Rep. of Germany, assignor to Palitex Project Company, GmbH, Krefeld, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 926,034

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733318

Int. Cl.[2] D01H *7/86, 15/00*

U.S. Cl. 57—279 **4 Claims**



1. In a textile yarn processing machine, such as a two-for-one twister or the like, having a plurality of spindle assemblies eaching including a driven rotor mechanism defining therewithin an elongate yarn passageway extending initially along the axis of said spindle assembly and then radially out of said rotor mechanism, a stationary carrier mechanism for carrying a hollow supply package of yarn and including a hollow hub portion extending through the hollow yarn supply package to the outer end thereof and defining therewithin an elongate yarn passageway extending along the axis of said spindle assembly and joining with said rotor mechanism yarn passageway, and pneumatically operated threading mechanisms for automatically threading yarn withdrawn from the supply package through said passageways during threading-up of said spindle assembly and including selectively-operated air injector nozzle means positioned at the juncture of said yarn passageways for creating an air suction through said carrier mechanism passageway and a jet of positive air flow through said rotor mechanism passageway and means for selectively supplying air under pressure to said injector nozzle means including an air duct extending through said stationary carrier mechanism from said air injector nozzle means to an outer end and an air supply connector member mounted for placement into and out of connecting engagement with said outer end of said air duct; the improvement of said air duct comprising:

an air duct extending from said injector nozzle means substantially parallel throughout its length with said yarn passageway through said carrier mechanism to said outer end located generally at the zone of the upper outer end of the yarn supply package.

4,164,116

METHOD OF PRODUCING A POLYESTER FILAMENT YARN HAVING A HIGH LEVEL OF TWIST

Akio Kimura, Ibaraki; Osamu Wada, Takatsuki; Michikage Matsui, and Kiyotaka Ozaki, both of Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 22, 1978, Ser. No. 879,924

Claims priority, application Japan, Feb. 25, 1977, 52-19288

Int. Cl.[2] D02G *3/00*

U.S. Cl. 57—282 **5 Claims**

1. A method of producing a polyester filament yarn having a high level of twist which comprises imparting a high level of twist to a polyester filament yarn and subjecting said twisted yarn to a heat treatment in a hot fluid at a temperature from 70° C. to 130° C. to set the twisted yarn; said polyester filament yarn having the following properties:

(a) a boil-off shrinkage in boiling water being in a range of 0% to 5%

(b) a thermal shrinkage stress at 140° C. in hot air being more than 0.03 g/de

(c) a ratio of a thermal shrinkage stress at 180° C. in hot air to a thermal shrinkage stress at 140° C. in hot air being more than 1.0.

4,164,117

METHOD FOR MAKING SIMULATED SPUN-LIKE INGRAIN YARN

James R. Talbot, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

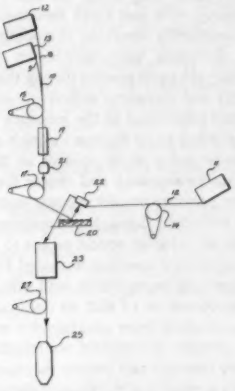
Continuation-in-part of Ser. No. 674,350, Apr. 7, 1976, Pat. No. 4,060,970. This application Oct. 6, 1977, Ser. No. 839,955

Int. Cl.[2] D02G *1/20, 3/04, 3/34*

U.S. Cl. 57—289 **10 Claims**

1. A process for producing a continuous filament spun-like ingrain yarn comprising combining at least two differently dyeable synthetic continuous filament yarns, false twist textur-

ing said combined yarn to produce a torque lively yarn, overfeeding said textured yarn to a high velocity gaseous jet to



convolute individual filaments in the yarn to form a plurality of torque induced kinks and winding said yarn onto a package.

4,164,118

APPARATUS FOR POSITIONING THE LINKS OF A LENGTH OF CHAIN

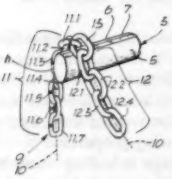
Gerhard Lange, Reutlingen, Fed. Rep. of Germany, assignor to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG), Fed. Rep. of Germany

Filed Aug. 3, 1977, Ser. No. 821,458

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1976, 2636220

Int. Cl.² B21L *3/02*

U.S. Cl. 59—31 **5 Claims**



1. In an apparatus for positioning the chain links of a length of chain having a longitudinal axis, said chain being movable step-by-step upwardly then downwardly over a vertex defined by a saddle, said vertex being located in a vertical median plane containing the longitudinal axis of said length of chain, the improvement comprising said saddle having a cylindrical supporting surface, said surface defined by a directrix extending vertically and lying in said vertical median plane and a generatrix extending horizontally and lying perpendicularly to said vertical median plane, and said saddle formed as an elongated bolt.

4,164,119

HYDRAULIC PUMP UNLOADING SYSTEM

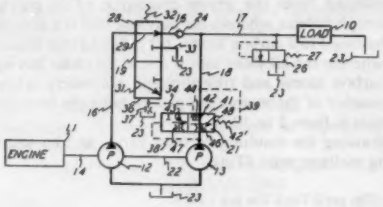
Donald J. Parquet, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 27, 1978, Ser. No. 890,037

Int. Cl.² F15B *13/09*

U.S. Cl. 60—428 **9 Claims**

7. A hydraulic pump unloading system comprising a hydraulic reservoir, two hydraulic pumps, a power source connected with said pumps for driving said pumps, a driven load-supporting member, hydraulic lines connected with said pumps and said load-supporting member for fluid-flow communication from said pumps to said load-supporting member, a valve means connected in fluid-flow communication in each of said hydraulic lines, a fluid pressure responsive movable flow diverter means in one of said valve means for the flow of fluid through the respective said hydraulic line in one operative position of said flow diverter means and for diverting the flow of fluid from the latter said hydraulic line in another operative



position of said flow diverter means, an additional hydraulic line fluid-flow connected between said one of said valve means and said reservoir for receiving the flow diverted by the latter said valve means and thereby diverting that flow to said reservoir, an additional hydraulic line connected between the two said valve means, and a fluid pressure responsive movable flow diverter means in the other of said valve means for diverting the flow to the latter said additional hydraulic line for fluid pressure actuating said one of said valve means.

4,164,120

CONTROL DEVICE FOR COMBUSTION ENGINE

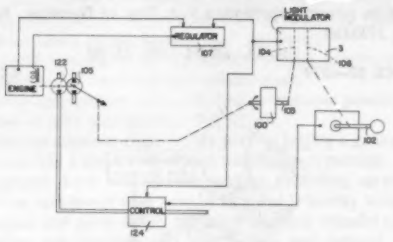
Norbert J. Funk, Grosswallstadt, and Siegfried Püschel, Aschaffenburg, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,503

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658698

Int. Cl.² F15B *21/08*; F02D *11/10*

U.S. Cl. 60—431 **11 Claims**

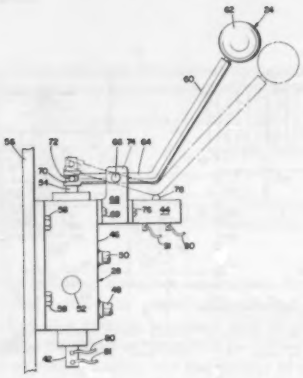


1. In a control system for an internal combustion engine for use with fork trucks and other vehicles, the engine having an electrical element for controlling the RPM of the engine, an operator control element movable to effect control of the RPM of the engine, electrical circuitry for variably energizing said electrical element for controlling the RPM of the engine comprising a modulator for controlling the energization of said electrical element in response to the position of said operator element, said modulator comprising a light source for producing a stream of light, a photosensitive element connected into an output circuit to control the energization of said electrical element, and a shutter positioned between said light source and said photosensitive element and movable to vary the amount of light striking said photosensitive element from said light source, and means connecting said shutter to said operator control element to move the shutter to vary the light beam in accordance with movement of the operator control element.

4,164,121
CONTROL APPARATUS FOR INDUSTRIAL TRUCKS

Henry J. Houseman, Fairless Hills, and Richard W. Nowicki, Penndel, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 17, 1978, Ser. No. 906,725
Int. Cl.[2] F15B *13/09;* H01H *9/06*
U.S. Cl. 60—486 7 Claims



1. In a hydraulic system for an industrial truck load carriage comprising a hydraulic motor operatively connected to said load carriage; a first pump having an outlet connected to said hydraulic motor; a control valve connected between said first pump outlet and said hydraulic motor, said control valve including a valve spool movable between a first position permitting no oil flow from said first pump outlet to said hydraulic motor and a second position permitting maximum oil flow from said first pump outlet to said hydraulic motor; and a second pump having an outlet connected to said hydraulic motor in parallel with the outlet of said first pump; the improvement comprising control means for activating said second pump when said valve spool is in said second position, said control means comprising a control rod operatively connected to said valve spool and movable between a first position corresponding to the first position of said valve spool and a second position corresponding to the second position of said valve spool, and switching means operatively connected to said second pump and including an operating element movable in response to movement of said control rod to activate said second pump, said operating element being moved by said control rod only when a bending moment is applied to said control rod of sufficient magnitude to deflect said control rod a predetermined amount.

4,164,122
CYLINDER CONSTRUCTION AFFORDING AUTOMATIC RE-PHASING OF MASTER AND SLAVE CYLINDERS

Gerald G. Ward, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sep. 19, 1977, Ser. No. 834,628
Int. Cl.[2] B60T *13/00*
U.S. Cl. 60—547 R 6 Claims

1. In a master cylinder construction for use with a slave cylinder, said master cylinder having:

a tubular central member;

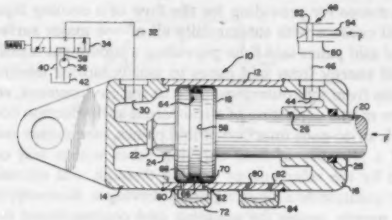
a head end member secured to said central member and having a first port for selectively communicating with a fluid pressure source or a fluid reservoir;

a rod end member secured to said central member and having a second port communicating with the slave cylinder;

a piston having a seal assembly reciprocably mounted within said central member; and

a piston rod secured to said piston and extending through said rod end member; the improvement affording automatic rephasing of said master and slave cylinder consisting essentially of:

a first pair of orifices extending through said central member and positioned longitudinally along said central member



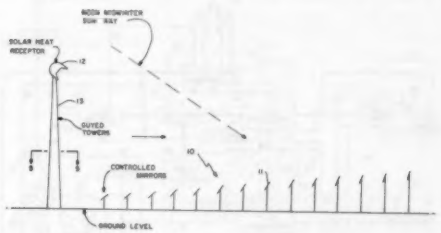
so that said first orifices are adjacent to and on either side of said seal assembly when said piston is fully retracted, and

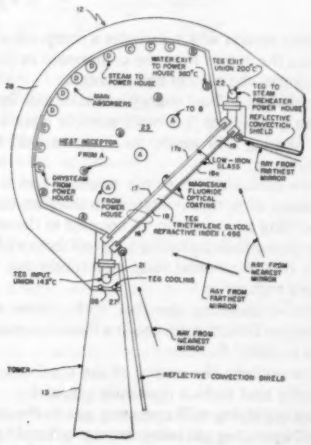
first means carried on the exterior of said central member to provide direct and unobstructed fluid communication between said first pair of orifices.

4,164,123
SOLAR THERMAL ELECTRIC POWER PLANT

Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708

Filed Aug. 25, 1976, Ser. No. 717,641
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 42 Claims





1. A solar energy system comprising solar collector means

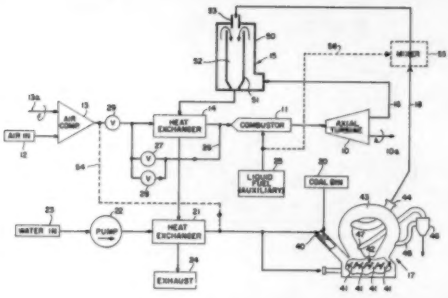
consisting of a plurality of controllable mirrors, solar receptor means including thermally insulated cavity forming means with a light entrance facing downward and away from the equator and including double paned window means across said entrance, where the outermost pane is exposed to the environment, with a flow space between major surfaces of said panes and positioned to receive solar energy from said solar collector means means for providing for the flow of a cooling liquid in thermal contact with substantially all of one major surface of each of said panes said flow providing a significant transfer of thermal energy from said panes to said liquid for minimizing heat loss from said outermost pane to the environment, antireflection means consisting of a tranparent antireflection coating on each air-to-pane interface of said planes, tube means consisting of a plurality of fluid carrying tubes within said cavity heated by the solar energy passing through said entrance, a power plant with a working fluid driving a thermodynamic prime mover, means for pumping said cooling liquid to said power plant and through heat exchanger means to deliver thermal energy to said working fluid, and means for pumping a heat transfer fluid through said tubes and to said power plant and through second heat exchanger means to deliver thermal energy to said working fluid.

4,164,124

TURBINE SYSTEM USING UNCLEAN FUEL

David W. Taylor, Edgemont, and Garland L. Fulton, Wayne, both of Pa., assignors to Combustion Turbine Power, Inc., Bala Cynwyd, Pa.

Continuation-in-part of Ser. No. 586,078, Jun. 11, 1975, abandoned. This application Nov. 22, 1976, Ser. No. 743,911
Int. Cl.[2] F02C *1/06*
U.S. Cl. 60—683 **13 Claims**



1. A turbine system which includes a compressor and means for supplying the output from the compressor to the turbine as its operating gas, the system comprising:

means including a fluid energy attrition mill for providing unclean particulate fuel with particle sizes substantially 100% passing 200 mesh, the attrition mill including a toroidal loop;

means for removing from the unclean fuel a substantial proportion of pyrites contained in the fuel, the removing means being a by-pass circuit coupled to the attrition mill, the by-pass circuit including a tap-off from a high pressure region of the toroidal loop and return tap to the low pressure region;

means for combusting the fuel with pyrites removed in exhaust gas from the turbine at a flame temperature not in excess of 2600° F.;

means for utilizing the output of the combustion means to indirectly heat turbine operating gas; and

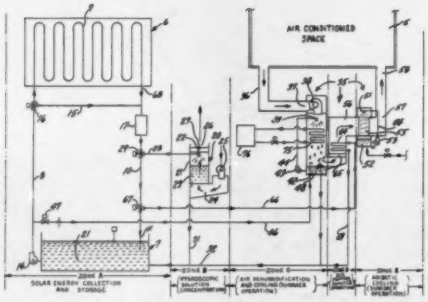
means for supplying mill operating gas to the attrition mill, the mill operating gas being steam produced by an indirect heating means supplied with the output of the combustion means after utilization in the utilizing means.

4,164,125

SOLAR ENERGY ASSISTED AIR-CONDITIONING APPARATUS AND METHOD

William C. Griffiths, Lebanon, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 17, 1977, Ser. No. 842,679
Int. Cl.[2] F25B *27/00*
U.S. Cl. 62—2 **15 Claims**



1. Air-conditioning apparatus for utilizing solar energy comprising:

a solar heat collector having liquid conducting means;

a reservoir and a body of hygroscopic liquid contained therein having a predetermined heat capacity;

connecting means and pumping means for connecting the collector and the reservoir in a circuit for circulating the hygroscopic liquid therethrough;

solution-concentrating means for withdrawing liquid from one portion of the circuit and returning it in more concentrated condition to another downstream portion of the circuit;

an enclosure for an air-conditioned space;

an air-processing assembly connected with said enclosure to withdraw air from one portion and return it to another portion, said assembly having means for advancing a stream of air from said one enclosure portion along a path through the assembly to said other portion and further comprising in the order as follows:

first liquid-dispersing means for dispersing a stream of said liquid in finely divided condition for contact with essentially all air passing traversing a portion of said path, said dispersing means being connected with one portion of said circuit for withdrawing a liquid therefrom;

liquid collecting means connected with a portion of said circuit downstream from its connection with said dispersing for returning liquid to said circuit;

liquid-conducting heat exchange means in heat exchange relation with said air connected with one portion of said circuit for withdrawing heated liquid therefrom and returning the liquid to a portion of said circuit further downstream;

adiabatic cooling means comprising a second liquid-dispersing means for placing said air in contact with finely divided water; and

means for supplying water to said second liquid-dispersing means; and

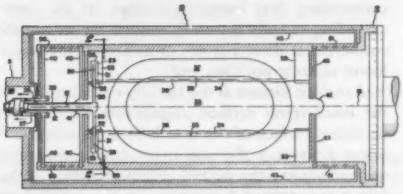
control means for selectively operating said heat exchange means and said first and second liquid dispensing means.

4,164,126

SELF-REGULATING TRANSPORT MECHANISM FOR SUPERCONDUCTIVE ROTOR REFRIGERANT

Evangelos T. Laskaris, Schenectady; Bruce B. Gamble, Elnora, and Burton D. Hatch, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 573,168, Apr. 30, 1975, Pat. No. 4,123,677.
This application Feb. 17, 1978, Ser. No. 878,790
Int. Cl.[2] F17C 7/02
U.S. Cl. 62—55 7 Claims



1. A self-regulating transport mechanism for regulating depth of liquid refrigerant centrifugally forced against the interior surface of a rotating container and evaporating at a varying rate, said mechanism comprising:

a conduit extending axially into the interior of said rotating container and carrying a flow of said refrigerant at constant pressure, said conduit rotating in unison with said container;

refrigerant dispensing means attached to, and extending radially outward from, said conduit, so as to maintain a layer of liquid refrigerant of predetermined depth extending radially inward from the interior surface of said container and surrounding a central core of evaporated refrigerant in said container during rotation of said container, said dispensing means comprising a hollow tube opening into said conduit and being open-ended at its outermost radial location, and an enclosure affixed to, and spaced apart from, said tube and surrounding the open-ended region of said hollow tube, said enclosure being open at its outermost radial location and having at least one opening close to its innermost radial location; and

tubing means in gaseous communication with said central core of evaporated refrigerant for conducting said evaporated coolant out of the interior of said rotating container, said tubing means rotating in unison with said container.

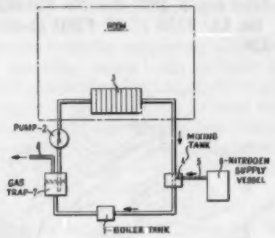
4,164,127

PROCESS AND DEVICE FOR ROOM COOLING

Klaus Baumgärtner, Düsseldorf-Wittlaer, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 2, 1977, Ser. No. 802,717
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626644
Int. Cl.[2] F25D 17/02; F25B 27/02, 19/00
U.S. Cl. 62—98 4 Claims

1. In a process for periodically cooling a room and the like having a radiator therein as part of a central heating system which supplies water to the radiator through a water circuit in the form of a continuous loop which flow communicates with the radiator, the improvement being injecting liquid nitrogen into a mixing device in flow communication with the water circuit, utilizing the injection of liquid nitrogen in the water circuit to lower the temperature of the water to a temperature at least slightly above its freezing point, and discharging the gaseous form of the nitrogen from the water circuit through a



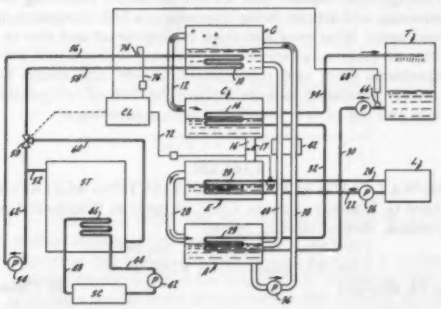
gas trap which is downstream from the mixing device and which communicates with the water circuit.

4,164,128

ABSORPTION REFRIGERATION SYSTEM AND CONTROL

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1977, Ser. No. 839,478
Int. Cl.[2] F25B 15/00
U.S. Cl. 62—105 6 Claims



5. A method of operating a closed circuit, continuous cycle absorption refrigeration machine of the type including a generator, a condenser, an absorber, an evaporator through which chilled water is circulated, means for supplying a heated fluid to said generator, and means for supplying a cooled fluid to said absorber and to said condenser comprising the steps of:

sensing the temperature of the heated fluid supplied to said generator;

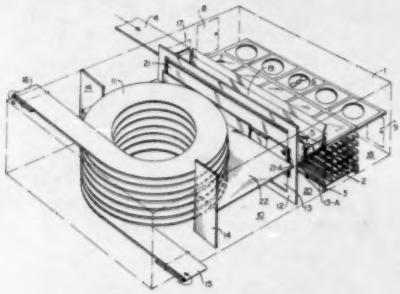
sensing the temperature of said cooled fluid being supplied to said absorber and to said condenser;

adjusting a three-way proportional control valve to modify the maximum energizing temperature of the heated fluid supplied to said generator in response to changes as sensed in the step of sensing the temperature of said cooled fluid;

sensing the temperature of the chilled water circulated through the evaporator; and

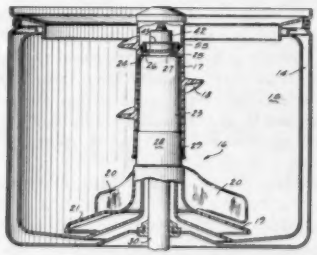
adjusting further the control valve for modifying the maximum energizing temperature of the heated fluid in response to changes as sensed in the step of sensing the temperature of the chilled water.

4,164,129
VARIABLE MODE FREEZER
Harry K. Stueber, P.O. Box 421, Gambrills, Md. 21054
Filed Sep. 1, 1977, Ser. No. 829,882
Int. Cl.[2] F25B *27/00*; F25D *13/06*
U.S. Cl. 62—326 **10 Claims**



1. An apparatus for freezing articles which is adaptable to variable modes of operation, said apparatus having plural compartments on upper and lower levels and comprising air moving means, refrigeration means and first and second means for receiving and maintaining the articles being frozen while they are in said device; said refrigeration means being disposed in a first compartment on said lower level and having second and third compartments disposed on either side thereof; said air moving means being disposed on the upper level over said second compartment; said first means for receiving and maintaining said articles being disposed in a fourth compartment adjacent said third compartment and in a position to receive refrigerated air passing through said third compartment from said refrigeration means; said second means for receiving and maintaining said articles being disposed in a fifth compartment on said upper level over said third compartment and also in a position to receive refrigerated air passing through said third compartment from said refrigeration means; and means for selectively regulating and controlling the flow of refrigerated air into and out of said fourth and fifth compartments.

4,164,130
ONE-WAY CLUTCH FOR DOUBLE-ACTING AGITATOR
Richard G. Hammer, Kansas, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 30, 1978, Ser. No. 891,533
Int. Cl.[2] D06F *13/06*; F16D *11/00*
U.S. Cl. 68—133 **10 Claims**



1. A clutch for imparting a unidirectional rotation to an auger portion of an agitator in an automatic washing machine of the vertical-axis type, the clutch being driven by alternating oscillations of a lower portion of said agitator, the clutch comprising:

a centrally splined cap member attached irrotatably to the lower portion of the agitator and including a cam having a cam lobe with a generally radially outward, spiral first camming surface and a second camming surface extending generally in a radial direction;

a cylindrical, driven inner surface on said auger portion spaced radially outwardly of the cam lobe;

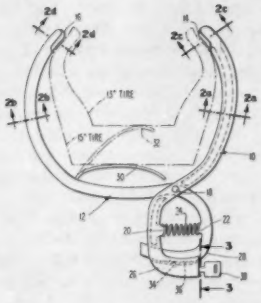
a clutch shoe carried radially between the cam lobe and the driven surface, the shoe comprising:

an outer surface engageable with the driven inner surface of the auger portion of the agitator,

an inner spiral surface engageable with the first camming surface of the cam lobe, the inner spiral surface and the cooperating first camming surface of the cam lobe extending radially inwardly toward the axis in the circumferential direction of corotation of the auger and lower agitator portions, and

an end surface formed at the radially outermost portion of the inner spiral surface, engageable with the second camming surface of the cam lobe upon rotation of the lower agitator in the non-auger driving direction, the end surface and the second camming surface of the cam lobe being inclined forwardly of a line radial thereto in a direction of non-driving rotation of the lower agitator portion.

4,164,131
AUTOMOBILE ANTI-THEFT DEVICE
John W. Desmond, 104 Walter Dr., Media, Pa. 19063, and Frank DiFerdinando, 1200 West Chester Pike, West Chester, Pa. 19380
Filed May 15, 1978, Ser. No. 905,952
Int. Cl.[2] E05B *73/00*
U.S. Cl. 70—14 **11 Claims**



1. A vehicle anti-theft device for lockably gripping a vehicle tire from either side thereof in order to hinder or prevent the rotation of said tire, comprising:

first and second clamping arms, each arm having a larger curved section and a smaller curved section, said smaller section being curved in a direction opposite to said larger section;

one of said arms having an aperture formed between the larger and smaller sections thereof, the other of said arms extending through said aperture;

pivot means extending through said aperture and through both of said arms to allow said arms to pivot relative to one another;

the distal end of one of said smaller sections defining a channel;

the distal end of the other of said smaller sections having an edge slidably disposed in said channel, whereby said last-named distal end slides in said channel when said arms pivot with respect to one another; and

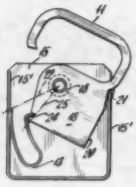
means adjacent said channel to enable the locking of said last-named lower end in said channel.

4,164,132

KEY RETAINER

George Loman, Orange, Conn., assignor to The W. E. Bassett Company, Derby, Conn.

Filed Jun. 7, 1978, Ser. No. 913,388
Int. Cl.[2] A47G *29/10*
U.S. Cl. 70—456 R 9 Claims



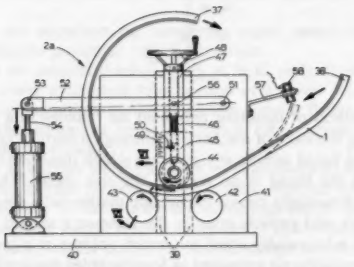
1. In a key retainer or the like, a case defined by and between spaced edge-fitted front and back panel members, with an opening at one end, a bail member including a body portion essentially contained within the space between and pivotally connected to said panel members, said bail member also including a C-shaped bail portion integrally connected at one end to said body portion and extending essentially outside said panel members via the end opening, said panel members and said body portion having aligned pivot apertures, rivet means through the aligned apertures and serving to retain said panel members in assembled relation to each other and to said body portion while also supporting said bail member for a limited angular range of pivoted bail-portion movement external to and with respect to said case, the other end of said bail portion being spaced from said body portion such that (a) in one limiting pivoted position the said other end of said bail portion coacts with the adjacent region of said case to define an effectively closed key-retaining bail loop and (b) in a second limiting pivoted position said other end of said bail portion is spaced from said case to an extent permitting selective key application to or removal from said bail, and spring means coacting between said bail-member body portion and said case and resiliently urging said bail member in the direction of said one position.

4,164,133

APPARATUS FOR FORMING CIRCULARLY BENT ARTICLES FROM A STRAIGHT METAL PROFILED STRIP

Cornelis C. Damman, Diemen, Netherlands, assignor to Holland Mechanics B.V., Diemen, Netherlands

Division of Ser. No. 742,679, Nov. 17, 1976, Pat. No. 4,054,982. This application Aug. 4, 1977, Ser. No. 821,965
Claims priority, application Netherlands, Nov. 21, 1975, 7513654; Mar. 12, 1976, 7602645
Int. Cl.[2] B21D *5/14*
U.S. Cl. 72—12 8 Claims



1. A three-roll ring rolling machine for forming a piece of metal strip material having curved end portions into a closed circular ring, comprising

a frame;

two outer forming rolls rotatably mounted in said frame;

a middle forming roll;

mounting means rotatably supporting said middle forming roll, said mounting means being movable in said frame along a path extending perpendicularly to a line connecting the centers of said two outer forming rolls and intersecting said line midway between said centers;

adjusting means for setting said mounting means and middle forming roll with respect to said outer forming rolls;

means for driving said forming rolls;

means associated with said adjusting means for shifting said mounting means and middle forming roll through a selected distance from said set position in a direction towards said outer forming rolls; and

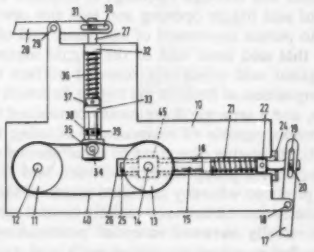
operating means for operating said associated roll shifting means.

4,164,134

METHOD OF MANUFACTURING A METALLIC BELT OF HIGH STRENGTH, AND APPARATUS FOR USE IN SAID METHOD

Evert J. Vollers, Haaren, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Aug. 11, 1977, Ser. No. 823,721
Claims priority, application Netherlands, Aug. 20, 1976, 7609297
Int. Cl.[2] B21D *53/14*
U.S. Cl. 72—183 5 Claims



1. A method for improving the cyclical bending strength of an endless metallic belt, said method comprising:

subjecting said belt to tensile stress by applying a predetermined tensile force in the longitudinal direction; then

applying a lateral force to said belt in the radially outward direction by means having such a radius as to introduce a radial stress gradient and produce a plastic deformation in said belt; and

maintaining said tensile force on said belt while applying said lateral force, the tensile stress being such that no plastic deformation occurs at the radially inner side of said belt.

4,164,135

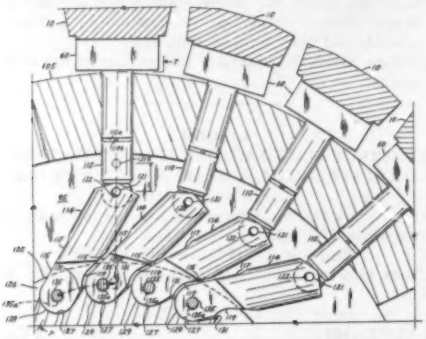
ROTARY INTERNAL PIPE BENDING MANDREL

Edward A. Clavin, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Dec. 2, 1977, Ser. No. 856,850
Int. Cl.[2] B21D *9/00*
U.S. Cl. 72—466 14 Claims

1. Internal pipe bending mandrel comprising a plurality of toggle means disposed spaced outwardly about an axis and being pivotally movable in planes transverse to said axis between retracted positions angular to radial and substantially radial extended positions, the outer ends of said toggle means each being pivotally connected to radially movable slide means each having outwardly facing means for engagement with the

interior side of a pipe wall, said slide means and toggle means being disposed in plural axially spaced groups of circularly spaced slide means each having a toggle means connected thereto, separate means associated with each group of toggle means supported about said axis having plural radial openings through which said slide means are slidably disposed, the inner ends of said toggle means of each group thereof being pivotally connected to a separate rotative means rotatably disposed about said axis, each said rotative means having a peripheral slot into which said inner ends of said toggle means are disposed, said inner end of each said toggle means being arcuately rounded and said slot having concavely rounded surfaces for engaging said inner end of each said toggle means pin means engaged through an opening through the inner end of each said



toggle means and through openings at opposite sides of said slot, one of said toggle opening and said slot openings being enlarged to permit movement of said inner end of the toggle means so that said inner end of the toggle means may bear flushly against said concavely rounded surface of said slot without imposition of force in the toggle direction against said pin means, and a separate drive means connected to each said rotative means capable of reciprocably rotating the rotative means in both rotative directions to simultaneously move said toggle means of a group thereof between said retracted and extended positions whereby said slide means of said group are simultaneously moved between radially inward retracted positions and radially outward extended positions wherein said outwardly facing means associated with said group may be forcefully engaged with the interior side of a pipe wall.

4,164,136

METHOD AND APPARATUS FOR INVESTIGATING THE MOBILITY OF A SUBSTANCE

Brian H. Wiggins, Oxford, and Harold D. Williams, Denham, both of England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

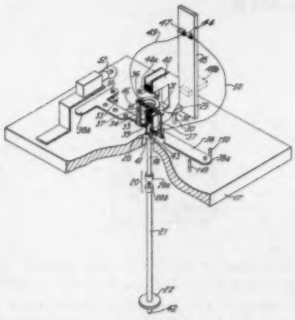
Filed Jul. 18, 1977, Ser. No. 816,803

Claims priority, application United Kingdom, Jul. 16, 1976, 29708/76

Int. Cl.[2] G01N *25/04*

U.S. Cl. 73—17 R **19 Claims**

1. Apparatus for use in determining the pour point of a substance, comprising: a displaceable elongated rigid member suspended freely from a support member at its upper end and having its longitudinal axis extending substantially vertical; shearing means at the lower end of said displaceable elongated member for suspension in the substance; displacing means connected for applying a rotary turning force to said displaceable elongated member in a substantially symmetrical relationship about said longitudinal axis thereof for urging said displaceable member to turn at least a limited amount about said longitudinal axis; means for connecting said displaceable member with said displacing means such that said displaceable member is constrained to only substantially concentric turning movement about said longitudinal axis such that there is no substantial angular movement of said displaceable member relative to the longitudinal axis thereof; means for preventing complete rotation of said displaceable member about said longitudinal axis and permitting movement in only a predetermined range; means for causing said displaceable member to



return to the same datum position after each determination of said pour point; means for causing said displacing means to operate at predetermined selected intervals for actuating said turning of said displaceable member; and means for monitoring the temperature of said substance.

4,164,137

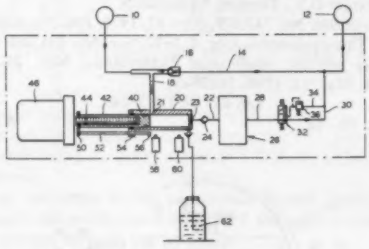
METHOD OF MEASURING VOLUME OF AIR ENTRAINED IN HYDRAULIC FLUIDS

William A. Williamson, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 2, 1978, Ser. No. 911,730

Int. Cl.[2] G01N *7/00*

U.S. Cl. 73—19 **6 Claims**



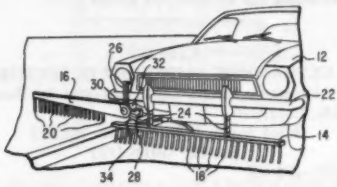
1. A method of counting entrained air bubbles in a liquid comprising the steps of discharging through a particle counter a measured liquid sample at a pressure which dissolves the air bubbles in the liquid or so reduces the size thereof that the counter substantially counts particulate matter only, discharging through said particle counter the same or a second liquid sample of substantially equal measured volume at a pressure which permits the air entrained to form bubbles discernible for counting by the counter, and subtracting from the total count of particles and air bubbles a count of particles.

4,164,138

HIGH SENSITIVITY GAS LEAK DETECTION SYSTEM

William H. Burkhart, Los Altos, Calif., assignor to Smith & Denison, Los Altos, Calif.

Filed Oct. 27, 1977, Ser. No. 845,954
Int. Cl.[2] G01N *31/00*
U.S. Cl. 73—23 21 Claims



2. A portable, high sensitivity gas leak detection system comprising:

means including at least twelve pendant tubes having their open ends substantially aligned for continuously sampling air close to the surface of the earth;

means including a pump for drawing air from said tubes for analysis;

manifold means for connecting said tubes to said pump with substantially equal path lengths from the end of each tube; and

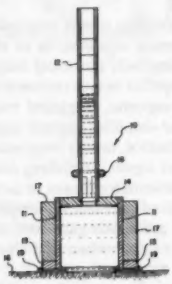
wherein the total internal capacity of said system to the analysis point including said pump, manifold means, and tubes is less than 125 cubic centimeters.

4,164,139

ASPHALT PENETRATION INDICATOR

George M. Jones, Salt Lake City, Utah, assignor to The Gilsabind Company, Mack, Colo.

Filed Aug. 9, 1978, Ser. No. 932,225
Int. Cl.[2] G01N *15/08*
U.S. Cl. 73—38 6 Claims



1. An apparatus for measuring water penetration into a bituminous pavement which comprises

(a) an integral conduit open at both ends consisting of a lower cylindrical tube portion of a given diameter containing an outwardly extending annular flange at the end thereof and an upper cylindrical tube portion of a lesser diameter, and

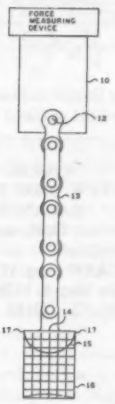
(b) an annular weight adapted to fit around said lower cylindrical tube portion of said conduit and rest on the upper surface of the outwardly extending flange wherein the annular weight is sufficiently heavy that when a sealant is placed on the botton surface the flange and the conduit is placed with the flange resting on a bituminous pavement the pressure exerted on the sealant by the annular weight is sufficient to seal the conduit to the bituminous pavement in a watertight relationship defining a watertight unit area such that water placed in said conduit will penetrate the pavement with the amount of penetration per unit area being determined by the change in water volume in the upper cylindrical tube portion of the conduit over a given period of time.

4,164,140

METHOD AND APPARATUS FOR MEASURING MATERIAL PROPERTIES RELATED TO STRENGTH

Brenton E. Jones, and Robert E. Reusser, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 30, 1978, Ser. No. 873,645
Int. Cl.[2] G01N *3/24*
U.S. Cl. 73—54 14 Claims



1. A method for measuring strength properties of a material, the improvement comprising:

(a) placing a testing device in contact with said material when said material is in a molten state, said testing device

1. being essentially nondistortable during the test;

2. having a shape through at least a part of which said molten material can flow; and

3. having means for associating therewith a force measuring device; and

(b) measuring the force required to pull said testing device from said material.

4,164,141

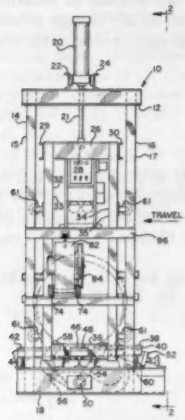
BRINELL TESTING APPARATUS

Louis Sandor, Hammond, Ind., and Albert T. Wendt, Keokuk, Iowa, assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 3, 1978, Ser. No. 921,556
Int. Cl.[2] G01N *3/48*
U.S. Cl. 73—81 10 Claims

1. An improved apparatus for determining the Brinell hardness of railway vehicle wheels comprising receiving means acting to accept and retain said wheel in a substantially vertical plane; elevator means positioned with respect to said receiving means so as to raise or lower said receiving means in a substantially vertical plane as desired; polishing means located in proximity to the travel path of said elevator means so as to polish at least a portion of said wheel being retained by said receiving means as said wheel is moved in a substantially verti-

cal plane by said elevator means; and Brinell testing means located in proximity to the travel path of said elevator means



so as to determine the Brinell hardness of said wheel at one or more points on said wheel polished by said polishing means.

4,164,142

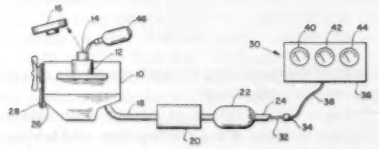
METHOD FOR SETTING SIDE TO SIDE CARBURETOR BALANCE

John D. Blanke, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 824,897, Aug. 15, 1977, Pat. No. 4,116,053. This application May 8, 1978, Ser. No. 904,106

Int. Cl.[2] G01M *19/00*

U.S. Cl. 73—118 **2 Claims**



1. The method of setting the side to side balance of a carburetor on an engine which is running smoothly with no misfiring cylinders and set to factory specifications for curb idle speed and timing comprising the steps of:

(a) disabling the air injection means;

(b) reading the CO and HC emissions and verifying the engine is running properly;

(c) turning both idle mixture screws to the maximum rich stop of the limiter caps whereupon the tailpipe O_2 level should be less than 1% and stable, if not, checking for vacuum leaks;

(d) reading the oxygen level;

(e) turning the left barrel mixture screw ¼ turn leaner;

(f) reading the increase in oxygen when stabilized;

(g) turning the left barrel mixture screw back to the rich limiter stop;

(h) turning the right barrel mixture screw ¼ turn leaner;

(i) reading the increase in oxygen when stabilized;

(j) turning the right barrel mixture screw to the rich limiter stop;

(k) establishing the side that had O_2 increase the most with a ¼ turn of the mixture screw as the leaner side and the other side as the richer side;

(l) turning the rich side mixture screw until the O_2 level reads the same as the lean side was when it was ¼ turn leaner;

(m) turning the rich side mixture screw back ¼ turn richer whereby the carburetor is now balanced;

(n) turning each mixture screw leaner ¼ turn at a time until the oxygen level in the tailpipe is between 1% to 1½%, if the oxygen reading is unstable, turning both mixture screws richer ¼ turn;

(o) continuing to equally enrich the mixture until the oxygen meter is stable; and,

(p) re-enabling the air injection means.

4,164,143

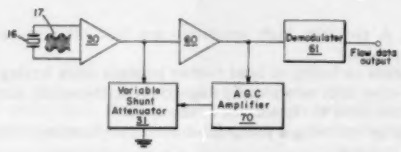
ULTRASONIC AMPLIFIER DETECTOR

Ralph A. Anderson, Chino, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Jul. 3, 1978, Ser. No. 921,935

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 VS **8 Claims**



1. An ultrasonic fluid flow measurement system comprising:

means for generating a Karman vortex street in a flowing fluid;

means for propagating an acoustic carrier signal normal to said Karman vortex street;

means to amplitude-modulate said acoustic carrier signal in accordance with modulating properties of said Karman vortex street so as to produce a composite amplitude-modulated acoustic signal comprising frequency components of said acoustic carrier signal and of said modulating properties of said Karman vortex street;

means for converting said composite amplitude-modulated acoustic signal to a composite electrical signal;

first carrier amplifier means for amplifying said composite electrical signal so as to obtain an amplified composite electrical signal;

variable-shunt attenuator means responsive to said amplified composite electrical signal so as to obtain an amplitude-conditioned, composite electrical output signal;

second carrier amplifier means responsive to said amplitude-conditioned, composite, electrical output signal and furnishing a second-amplifier, output signal;

automatic gain control means responsive to said second-amplifier, output signal, furnishing control signal for said variable-shunt attenuator means so as to maintain constant signal amplitude of said second-amplifier, output signal;

means within said automatic gain control means for generating a disconnect signal when said electromagnetic carrier signal drops to zero level; and

demodulator means for separating said frequency components of said electromagnetic carrier signal and said modulating properties of said Karman vortex street.

4,164,144

FLUID FLOWMETER

Hermann Kaiser, Utica, Mich.; Richard A. Nellums, Kirkwood, Mo., and Jerry A. Olson, Dearborn, Mich., assignors to Eaton Corporation, Cleveland, Ohio

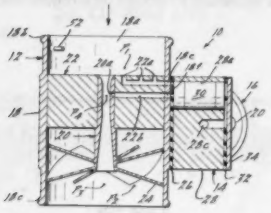
Filed Oct. 26, 1977, Ser. No. 845,751

Int. Cl.[2] G01F *1/44*

U.S. Cl. 73—213 **22 Claims**

1. In a device including a main passage for the flow of a fluid therethrough; a secondary passage disposed within and extending substantially parallel to an axis defined by said main passage, the secondary passage including a converging inlet for

receiving a portion of the fluid flowing in said main passage and an outlet for discharging the portion back into the main passage; means for sensing the stagnation pressure of the fluid; and means for sensing the static pressure of the fluid in the secondary passage; wherein the improvement comprises:



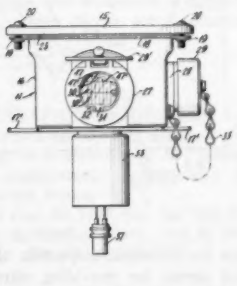
means operative to receive at least a portion of the remaining fluid in said main passage and impart a velocity vector thereto tangential to said axis for creating a reduced pressure area at the outlet of said secondary passage, thereby reducing the static pressure of the fluid in the secondary passage.

4,164,145

SELF-POWERED ELECTRICAL METER FOR DISPLAY OF A LIQUID-LEVEL OR THE LIKE MEASUREMENT

Milton Aron, Newington, Conn., assignor to De Laval Turbine Inc., Princeton, N.J.

Filed Mar. 20, 1978, Ser. No. 888,467
Int. Cl.[2] G01F *23/00*; F21V *5/08*
U.S. Cl. 73—293 **15 Claims**



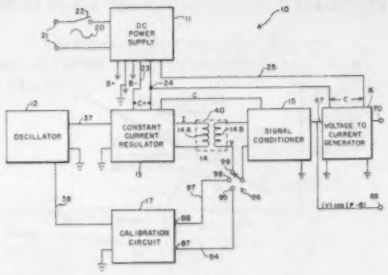
8. A self-contained and self-powered meter having an external-circuit connection and for monitoring the electrical condition of an external circuit connected thereto, comprising a housing having a first window opening at a read-out face and having a second window opening at a location offset from said read-out face, a meter assembly mounted within said housing and having a display face visually exposed at said first window opening, a solar-cell assembly producing an electrical-voltage output in response to incident light and mounted within said housing for light exposure at said second window opening, measuring-circuit means connecting the voltage output of said cell assembly to said meter assembly and to said external-circuit connection, whereby when connected to an external circuit and in the presence of light at said second window opening the electrical condition of the connected external circuit may be observed at said first window opening, and an optical fiber element positioned within said housing with a light pick-up end at the second window opening and with its other end oriented for illumination of at least part of the display face of said meter assembly.

4,164,146

APPARATUS AND METHOD FOR MONITORING THE PRESENCE OF A CONDUCTIVE MEDIA

Bruce W. DuVall; James W. Valentine, and Kenneth O. Morey, all of Colorado Springs, Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 2, 1976, Ser. No. 738,180
Int. Cl.[2] G01F *23/26*
U.S. Cl. 73—304 R **12 Claims**



1. In a conductive media detecting apparatus of the type in which primary and secondary windings are inductively coupled together and the presence of and the proportion thereof immersed in surrounding liquid metal varies the coupling and hence mutual inductance parameter between said coils, the improvement in combination therewith of:

means for exciting said primary winding with an AC signal of substantially constant current and selectively settable frequency f to induce an AC voltage signal of frequency f on said secondary winding; and,

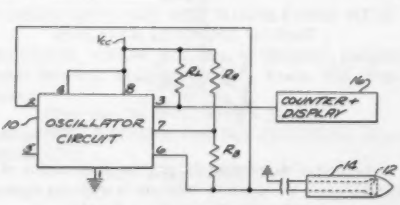
means responsive to said induced voltage signal for generating an output signal which is a measure of the presence of a conductive media being monitored, said output signal generating means being operable to generate said output signal as a function of the product of the magnitude of said induced voltage signal and the cosine of the angle of phase difference between said constant current signal and induced voltage signal.

4,164,147

TEMPERATURE SENSING APPARATUS

Bernard M. Kulwicki, Foxboro, Mass.; George Trenkler, East Providence, R.I., and David C. Hill, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1977, Ser. No. 866,107
Int. Cl.[2] G01K *7/34*
U.S. Cl. 73—362 R **11 Claims**



1. A temperature control system comprises oscillator circuit means having an output frequency dependent upon the first power of capacitance and a sensor having a linear output over a wide temperature range coupled to the circuit means, the sensor being formed of ferroelectric material selected such that the operating temperature of the environment in which the

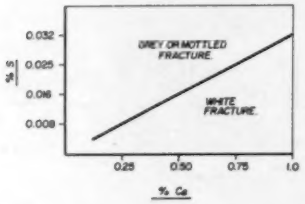
sensor is employed is above the Curie temperature of the ferroelectric material.

4,164,148

METHOD FOR DETERMINING SULFUR CONTENT OF CAST IRON

Henry A. Laforet, 3903 Scenic Dr., North Muskegon, Mich. 49445

Filed May 1, 1978, Ser. No. 901,370
Int. Cl.[2] G01N *33/20*
U.S. Cl. 73—432 R **9 Claims**



1. The method of determining the sulfur content of cast iron by the steps of

(1) adding to a sample of molten cast iron iron an amount of cerium ranging from 0.25% to about 1.0% by weight of the sample,

(2) casting the sample into a test bar having a cross section in the form of a 60°, 30°, right triangle,

(3) fracturing the test bar,

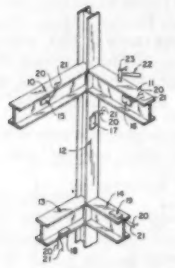
(4) observing the location and amount of any white areas in the test bar to determine the sulfur content of the metal constituting the test bar.

4,164,149

METHOD AND SYSTEM FOR MONITORING THE ANGULAR DEFORMATION OF STRUCTURAL ELEMENTS

Shigeo Okubo, 350 Sharon Park Dr., Apt. E24, Menlo Park, Calif. 94025

Filed May 9, 1978, Ser. No. 904,153
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—594 **15 Claims**



1. A method of monitoring the angular deformation of structural elements in a composite structure in response to mechanical vibrations, said method comprising the steps of:

(a) providing a plurality of angular motion signal generating sensors at different selected locations in said composite structure, each sensor being associated to a corresponding structural element;

(b) detecting the signals output from said signal generating sensors in response to vibrations propagated within said composite structure;

(c) establishing a vibration signature for said composite structure from the signals detected in step (b);

(d) subsequently detecting the signals output from said signal generating sensors; and

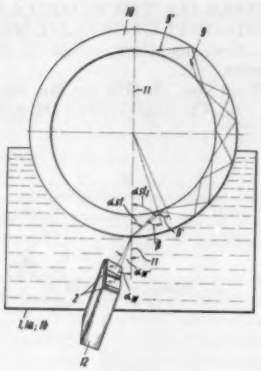
(e) comparing the subsequently detected signals with said vibration signature to detect differences therebetween.

4,164,150

SYSTEM FOR INSPECTING TUBES OR PIPES BY MEANS FOR ULTRASONICS

Karl Ries, Mülheim; Kurt Hannoschöck, Sonsbeck, and Gunter Simoneit, Mülheim, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 3, 1977, Ser. No. 803,362
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2625311
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—644 **5 Claims**



1. In a system for ultrasonic inspection of tubes or pipes using transducer means for providing ultrasonic radiation through a fluid coupler medium towards the surface of a pipe or tube to be refracted at the surface upon entering material of the tube or pipe under a particular test angle of refraction, comprising:

the transducer means being a plurality of transducers having different orientations to an axial plane normal through the surface of a pipe so that radiation launched by the transducers of the plurality have different angles of incidence upon the surface;

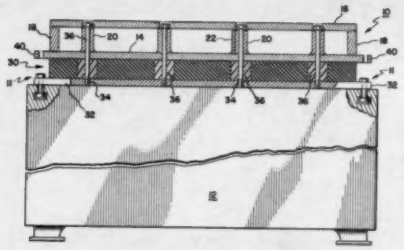
tank means in which said transducers are disposed and holding said coupler medium for establishing a refracting interface for ultrasonic radiation with the pipe as directed by the transducers at said orientations; and

means for providing coupler fluid to said tank means at adjustable temperatures, so that for each of said transducers and for a similar range of adjustable temperatures, different ranges for the set of refraction result in the pipe, only one transducer of the plurality being used for a particular pipe of particular dimensions to obtain a particular test angle of refraction in one of said ranges of angles.

4,164,151
RANDOM VIBRATION GENERATOR

Douglas C. Nolan, Syracuse, and Joseph T. Hubbard, Skaneateles, both of N.Y., assignors to Mechanical Technology, Inc., Latham, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,225
Int. Cl.[2] B06B *1/10*
U.S. Cl. 73—663 **10 Claims**

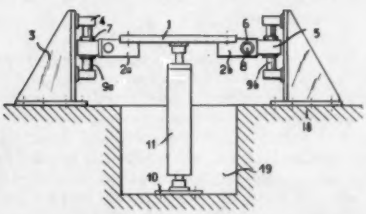


1. A random vibration generator for generating and transmitting to a test object, shocks over a wide band of frequency, amplitude and G-level, on a vibration machine, comprising:
- a housing including floor, ceiling and walls defining a hollow enclosed chamber;
- means for connecting together a test object and said housing;
- partition means within said housing extending between said floor and ceiling, for dividing said chamber into a plurality of separate compartments;
- a plurality of loose projectiles within said chamber and distributed among said compartments; and
- whereby when said vibration machine oscillates with a component transverse to said floor and said ceiling, it will cause said projectiles to bounce about within said compartments, impacting with said floor and ceiling, to generate shocks over a wide bandwidth of frequency, amplitude and G-level, which shocks are transmitted to the test object.

4,164,152
BIAXIAL VIBRATION-TESTING INSTALLATION

Robert Lemonde, Paris, and Bernard Dussetour, Maurepas, both of France, assignors to Societe pour le Perfectionnement des Materiels et Equipements Aerospatiaux S.O.P.M.E.A., Velizy-Villacoublay, France

Filed Dec. 20, 1977, Ser. No. 862,758
Claims priority, application France, Jan. 6, 1977, 77 00212
Int. Cl.[2] G01M *7/00*
U.S. Cl. 73—665 **3 Claims**

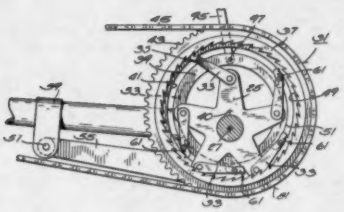


1. A seismic test apparatus comprising: vibration means for subjecting a specimen holder table to vibrations with respect to a massive support structure in two perpendicular directions; at least two guiding units each defined by at least one first shaft parallel to the first of said directions, at least one second shaft parallel to a second of said directions, and connecting means provided with at least two bores at right angles to each other; said first shaft being mounted in bearings of the table and slidably mounted in at least a first bore of said connecting means, and said second shaft being mounted in bearings of the massive support structure and slidably mounted in at least a second of said bores of said connecting means being perpendicular to said first bore.

4,164,153
DEVICE FOR USE IN MECHANICAL POWER TRANSMISSION SYSTEM

Denis J. Moritsch, 8205 Woodland Ave., Wauwatosa, Wis. 53213, and Fred A. Moritsch, 171 Las Flores, Nipomo, Calif. 93444

Filed Dec. 9, 1977, Ser. No. 859,053
Int. Cl.[2] F16H *11/02, 11/06*; B62M *9/00, 25/00*
U.S. Cl. 74—217 B **19 Claims**



8. A bicycle comprising a frame, a pair of wheels supporting said frame, a first sprocket fixed to one of said wheels, a drive member rotatably carried by the frame, a pair of pedals connected to said drive member, a plurality of links carried by said drive member for common rotation therewith and for pivotal movement relative thereto, each of said links having, at the outer end thereof, a guide post and a pivotally mounted pawl member, an outer ring having an annular internal surface engaging said guide posts and fixedly including a second sprocket and an internally projecting ratchet wheel, an inner ring, means supporting said inner ring on said frame for transverse movement relative to the rotary axis of said drive member, said inner ring having an outer annular surface engaging said guide posts and including a cam surface, each of said pawl members including a pawl part movable into engagement with said ratchet wheel to effect rotation of said outer ring in response to rotation of said drive member, and a cam part engageable with said cam surface to displace said pawl part out of engagement with said ratchet wheel, means biasing said pawl members toward positions of engagement of said pawl parts with said ratchet wheel, means on said frame for displacing said inner ring relative to the rotary axis of said drive member to vary the rate of rotation of said outer ring relative to said drive member, and a sprocket chain trained around said first and second sprockets.

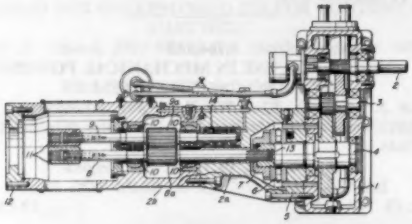
4,164,154
TRANSMISSION FOR TWO-WORM PRESS WITH COUNTER RUNNING WORMS

Heinrich Schäfer, Vellmar, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,480
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 7630036[U]
Int. Cl.[2] F16H *37/06, 1/18*
U.S. Cl. 74—665 GD **6 Claims**

1. A transmission for a two-worm press having counter running worms in a worm housing, which includes: a transmission housing, an additional housing connected to said transmission housing and detachably connectable to the worm housing of a worm press, only a first transmission output shaft and a second transmission output shaft rotatably journalled in said additional housing respectively having one end drivingly connectable to two worms of a worm press, only one additional

output shaft rotatably arranged in said transmission housing and forming part of a transmission and being drivingly connected to one of said first and second transmission output



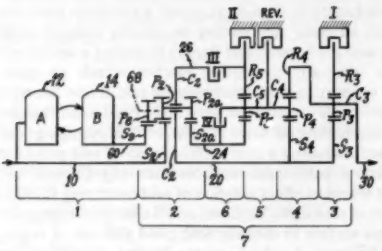
shafts, and an axial bearing unit located in said additional housing and externally journalling the free end of the other one of said first and second transmission output shafts.

4,164,155

ALL CONCENTRIC MULTI-RANGE SYNCHRONOUS SHIFTING HYDROMECHANICAL TRANSMISSION INCLUDING A MULTI-RANGE CONCENTRIC GEAR TRAIN PACKAGE

Bradley O. Reed, and John M. Nolan, both of Pittsfield, Mass., assignors to General Electric Company, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,252
Int. Cl.[2] F16H *47/04, 37/06, 57/10*
U.S. Cl. 74—687 **20 Claims**



18. In a transmission having concentric shafts interconnecting gear elements, the improvement comprising:

a compound planetary gear set (**2, 22**) including:

two concentric sun gears,

a planetary carrier having a first crank arm extending between said sun gears for attachment to a shaft (**20, 21**),

planetary gears supported by said carrier each having a bearing portion journaled through said carrier to permit said planetary gears to rotate independently of said carrier and having gear engaging surfaces on each side of said bearing portion with said gear engaging surface on each side meshing with one of said sun gears,

a second crank arm portion attached to said carrier and extending outwardly from the axis about which said carrier rotates for attachment to a shaft (**26, 27**); and

at least three concentric shafts (**10, 24, 20, 39, 25, 21**) of which at least one is a hollow shaft including:

a first and a second sun gear shaft, each supporting one said sun gear,

a third shaft attached to said first crank arm portion of said carrier for supporting said carrier and permitting rotation of said carrier about the axis of rotation of said shaft;

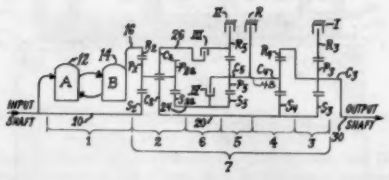
whereby the rotational motion of said first sun gear shaft (**10, 39**) can be passed through said third concentric shaft (**20, 21**) to said second sun gear shaft (**24, 25**).

4,164,156

FULL REVERSING HYDROMECHANICAL STEERING TRANSMISSION WITH MULTI-RANGE SYNCHRONOUS SHIFTING CONCENTRIC GEAR TRAIN PACKAGE

Bradley O. Reed, Pittsfield, Mass., assignor to General Electric Company

Filed Jan. 25, 1978, Ser. No. 872,255
Int. Cl.[2] F16H *47/04, 37/06, 57/10*
U.S. Cl. 74—687 **10 Claims**



1. A concentric multi-range gear train (**7, 71**) for transmissions comprising:

two concentric input shafts (**10, 16, 10, 60, 36, 39**);

an output shaft (**30, 40**) concentric with said input shafts;

a first gear train component (**2, 22**) connected to said two concentric input shafts for receiving two rotational input movements, for mixing those two movements to provide a third movement which is a weighted sum of the two input movements and for driving a set of three shafts (**20, 24, 26, 21, 25, 27**) with two outputs one of which is said third movement and the other of which is directly proportional to one of said two input movements, said three shafts also being concentric with said output shaft (**30, 40**) and said two concentric input shafts (**10, 16, 10, 60, 36, 39**), one said output driving the intermediate (**24, 25**) of the said three concentric shafts and the other said output driving the other two shafts (**20, 26, 21, 27**) of the said set of three concentric shafts;

an additional range gear train component (**5, 6, 55**) attached to the said intermediate (**24**) and to one of said other two (**20, 26**) of said set of three concentric shafts and to an additional range shaft (**48, 49**) which is also concentric with said other concentric shafts, said additional range gear train component comprising a three-element differential device (**5, 55**) having a first element connected to said intermediate shaft (**24, 25**) of said set of three shafts, a second element attached to said additional range shaft (**48, 49**) and a third element, a brake (II) for selectively securing said third element against rotation, a clutch (III) for selectively securing said third element to one of said other two shafts of the said set of three shafts and a clutch (IV) for selectively locking said first and second elements together to cause said additional range shaft (**48, 49**) to be driven by said intermediate shaft (**24, 25**) at the same speed as said intermediate shaft;

a low range and output gear train component (**3, 4**) including two (**3, 4, 33, 44**) three-element differential devices wherein a first element of each said device is attached to the one (**20, 21**) of said other two of said set of three concentric shafts which is not attached to said additional range gear train (**5, 6**), a second element of one said device (**4, 44**) is connected to said additional range shaft (**48**), the second element of the other (**3, 33**) said device is connected to the said output shaft (**30, 41**) and to the third element of said one device (**4, 44**), and the third element of said other said device is attached to a brake (I);

whereby engagement of the brake (I) of said low range and output gear train component causes said output shaft (**30, 41**) to be driven in a distinct first range which is a function of said third movement and whereby said additional range shaft and said second element of said other device of said three-element differential devices of said low range and output gear train component can be driven in three dis-

tinctly different speed ranges derived from the two said outputs of said first gear train component to provide said output shaft to be selectively driven in three distinct forward ranges in addition to said distinct first range.

9. In a multi-range transmission having concentric gear elements for combining the inputs available from two concentric input shafts into one or more intermediate rotational speeds and a final stage having concentric gear elements for the further combining of said intermediate speeds with the inputs from one of said two concentric shafts, the improvement of an intermediate range gear package comprising:

first and second concentric input shafts (**10, 39, 16, 60, 36**);

a compound planetary gear set (**2, 22**) including:

a first sun gear S_2, S_{22}, S_{72} attached to said first input shaft,

a second sun gear S_{2a}, S_{22a}, S_{72a} attached to a first hollow shaft (**24, 25, 76$_a$**),

a planetary carrier having a first crank arm extending between said sun gears to an attachment to a core shaft (**20, 21, 75**) extending through said hollow shaft to said final stage, said core shaft being concentric with said input shafts and said sun gears,

compound planetary gears each rotatably mounted on said carrier with gear engaging surfaces on each side of said carrier intermeshing with both said sun gears,

a second crank arm attached to said carrier and extending away from said core shaft;

said second crank arm (**74, C_2, C_{22}**) being attached to a second hollow shaft (**26, 27, 78**) which is concentric with the other said shafts;

a second planetary gear set (**5, 55**) concentric with said surrounding said core shaft including a sun gear attached to said first hollow shaft, a ring gear and a carrier attached to and supporting a third concentric hollow shaft for interconnecting said second planetary gear set with said final stage;

brake means for selectively immobilizing said ring gear of said second planetary set;

clutch means for selectively attaching said second hollow shaft to said ring gear of said second planetary set; and

clutch means for selectively attaching said first hollow shaft to said carrier of said second planetary set;

whereby said intermediate range gear package provides three distinct rotational speeds which are derived from said two inputs.

4,164,157

DEVICE FOR ADJUSTING IGNITION TIMING IN A MOTOR-CYCLE PROVIDED WITH FLUID COUPLING

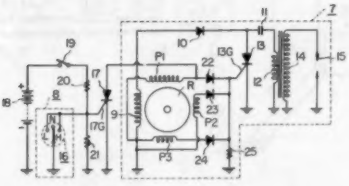
Masayuki Kudo, 3-16-13, Saiwai-Cho, Shiki-Shi, Saitama-Ken; Nobuo Miura, 915, Shimo-Niikura, Wako-Shi, Saitama-Ken, and Shigetaka Hada, 29-47, Hon-Machi, Wako-Shi, Saitama-Ken, all of Japan

Filed Oct. 25, 1977, Ser. No. 844,893

Claims priority, application Japan, Oct. 29, 1976, 51-146758[U]

Int. Cl.^{2} B60K *41/18*; F02P *5/04*; H05B *41/392*

U.S. Cl. 74—860 **1 Claim**



1. In a device for adjusting ignition timing for an engine mounted on a motor-cycle which includes an engine; an ignition circuit having at the primary side thereof a thyrister as a switching means, a diode, a capacitor, a primary ignition winding and a rotor of a.c. electric power generator, and at the secondary side thereof a secondary ignition coil and ignition plugs; a fluid coupling connected to said engine; a power transmission mechanism which receives driving force from said fluid coupling and has at least two-stage speed changing function of a low speed drive and a high speed drive; and shift indicating switch means which changes over in association with shifting of said power transmission mechanism to indicate the shift position of the low speed drive, the high speed drive, or the neutral position, the improvement comprising first, second and third ignition signal emitters in said ignition circuit arranged in parallel relative to the gate of said thyrister and to produce output signals by rotation of said rotor of said a.c. electric power generator, the output signal being forwarded to the gate of said thyrister to connect and disconnect the same, said first ignition signal emitter forwarding its output signal to the gate of said thyrister when the shift mechanism is shifted to the low speed drive range or high speed drive range, said second ignition signal emitter forwarding its output signal to the gate of said thyrister when the shift mechanism is shifted to the neutral position, and said third ignition signal emitter forwarding its output signal to the gate of said thyrister when the shift mechanism is shifted to the low speed drive range or high speed drive range and the motor-cycle is in the state of running, said first ignition signal emitter being advanced from said second ignition signal emitter, and said third ignition signal emitter being advanced from said first ignition signal emitter when the motor-cycle is running; and another thyrister for short-circuiting said ignition signal emitters, which is provided in parallel with said first ignition signal emitter, the gate of said thyrister being connected to said shift indicating switch means, and said thyrister being made conductive when said shift indicating switch means has been changed over to the neutral position so that the advanced signal emitter may be short-circuited.

4,164,158

PUNCHING APPARATUS

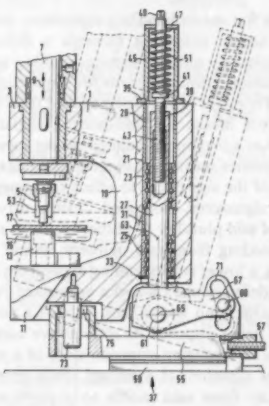
Rolf Peddinghaus, Deterbergerstrasse 25, Ennepetal, BRD, Fed. Rep. of Germany (5828)

Filed Mar. 27, 1978, Ser. No. 890,480

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 7709876[U]

Int. Cl.^{2} B26F *1/02*

U.S. Cl. 83—191 **7 Claims**



1. A punching apparatus comprising a frame that is generally C-shaped in that it defines two outwardly extending limbs, a first movable punch disposed in one of said limbs and a second fixed punch disposed in the other of said limbs, a supporting base, guide means for supporting said frame in the direction of thrust of one of said punches, means for pivotally mounting

said guide means on said base about an axis extending at right angles to the direction of thrust of the frame, said guide means comprisng a cylindrical column mounted in a bore defined by said frame and extending parallel to the direction of thrust of one of the punches, means for pivotally mounting the column relative to said base and means for guiding the frame relative to the supporting base including a slot defined by said supporting base and a stud secured to said frame, the faces of said stud and slot extending along planes at right angles to the pivot axis of said column.

4,164,159

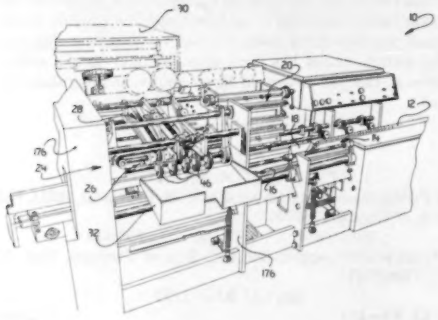
APPARATUS FOR FEEDING SIGNATURES FROM A SADDLE TO A TRIMMER

John J. Marciniak, Berea, Ohio, assignor to Harris Corporation, Cleveland, Ohio

Filed Dec. 22, 1977, Ser. No. 863,315

Int. Cl.[2] B65H *5/00*

U.S. Cl. 83—280 **10 Claims**



1. Apparatus for use in handling signatures, said apparatus comprising a saddle extending through a delivery station, means for sequentially moving signatures along said saddle to said delivery station, trimmer means for sequentially trimming signatures, said trimmer means being spaced from said delivery station, conveyor means for transporting signatures to said trimmer means at a first speed, said conveyor means including a plurality of pusher means for sequentially engaging trailing edge portions of the signatures to effect movement and registration of the signatures, elongated flexible drive means for moving each of said plurality of pusher means in turn along an upper run extending from said delivery station toward said trimmer means, a lower run extending away from said trimmer means to said delivery station and a connector run extending between said upper and lower runs, at least a portion of said connector run being disposed directly above said saddle, and transfer means for engaging opposite sides of a signature and transferring the signature at a second speed greater than the first speed away from said saddle to a position where one pusher on said conveyor means may engage same, said transfer means accelerating the signature upwardly at said second speed to a position where the trailing edge portion of the signature is ahead of said one pusher means, said one pusher means engaging the trailing edge of a signature at said position for effecting movement of the signature along said conveyor means.

4,164,160

TRANSVERSE CUTTER

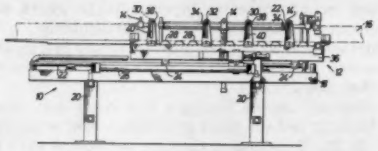
Jan-Olof Johansson, Hoganas; Heikki Korpela, Helsingborg, and Karel Spacek, Morarp, all of Sweden, assignors to Gullfiber AB, Billesholm, Sweden

Continuation-in-part of Ser. No. 755,019, Dec. 28, 1976, Pat. No. 4,117,754. This application Mar. 24, 1978, Ser. No. 889,907

Claims priority, application Sweden, Mar. 25, 1977, 7703474

Int. Cl.[2] B23D *25/04*; B26D *1/56*

U.S. Cl. 83—307.2 **3 Claims**



1. An apparatus for transverse cutting of a web of cellular plastic fed continuously out of a forming machine comprising:

a support stand;

a carriage means disposed in a plane and mounted for reciprocating motion on said support stand;

a plurality of cutting devices comprising mutually spaced hot filaments reciprocably mounted on and extending transversely across said carriage means;

means for moving said carriage means in successive synchronized traverses with said web and simultaneously moving said plurality of cutting devices perpendicular to the plane of said carriage;

said means for moving said carriage means in successive synchronized traverses with said web moves said plurality of cutting devices towards said carriage means from above said web and alternately moves said plurality of cutting devices away from said carriage means from below said web during successive synchronized traverses of said carriage means in the direction of motion of said web to divide said web transversely into separate lengths by means of said cutting devices; and

means for moving said plurality of cutting devices in a horizontal motion in the plane of said carriage means to cut profiles in said separate lengths of said web.

4,164,161

MODIFIED STAPLE CUTTER

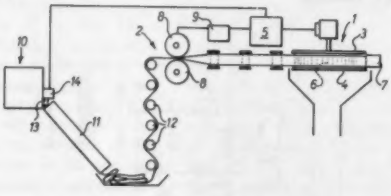
Philip T. Slack, Halifax, England, assignor to Plasticisers Limited, Near Bradford, England

Filed Jan. 30, 1978, Ser. No. 873,703

Claims priority, application United Kingdom, Jan. 22, 1977, 2677/77

Int. Cl.[2] D01G *1/04*

U.S. Cl. 83—346 **5 Claims**



1. An apparatus for cutting elongate material into predetermined lengths comprising a cutting assembly including a number of spaced apart knife edges secured to a mounting member, winding means for winding successive layers of material to be cut in contact with the knife edges, means for forcing the material onto the knife edges to thereby sever the material,

press nip rollers arranged to feed the material to the cutting assembly, common motor means having an operative connection with both the winding means and the press nip rollers, and variable transmission means in said operative connection for varying the relative speeds of the winding means and the press nip rollers,

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4,164,162

METHOD OF AND DEVICE FOR CUTTING BLOCKS OF FOAMED MATERIAL

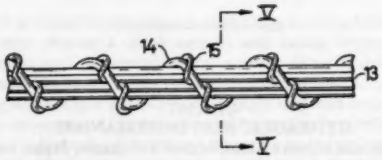
Gunter Eiselt, Schopenhauerweg, and Rudolf Hossbach, Am Kreuzbuchel, both of 5463 Unkel, Fed. Rep. of Germany

Division of Ser. No. 537,964, Jan. 2, 1975, Pat. No. 4,033,213. This application Apr. 18, 1977, Ser. No. 788,230

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1974, 2400204; Feb. 6, 1974, 2405554; Sep. 4, 1974, 2442353

Int. Cl.[2] B23D *61/16*

U.S. Cl. 83—651.1 **2 Claims**



1. A device for clean cutting of blocks of foamed synthetic material having individual pores especially foamed polyethylene linearly in an easily controlled manner, which includes in combination: an endless cable including a core of elastic wear resistant material adapted to withstand a maximum preload of from 5 to 30 kp and having a small diameter within the range of from 0.5 to 2 mm, and at least one wire of wear resistant material having a small diameter of from 0.1 to 0.3 mm and wound around said cable in a predetermined helical path, said endless cable having a physique whereby individual pores of the foam material are torn open by said wire wound around the core of the cable so that a clean and linear cut is achieved and also for attaining a separation cutting speed as high as possible due to the preload with simultaneously satisfactory quality of separation.

4,164,163

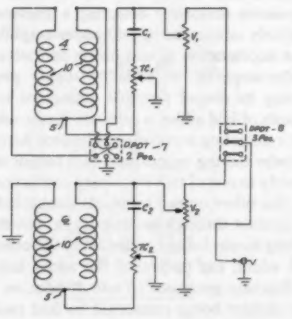
ELECTRIC GUITAR CIRCUITRY

Orville J. Rhodes, Van Nuys, Calif., assignor to Peavey Electronics Corp., Meridian, Miss.

Filed Jun. 22, 1977, Ser. No. 808,790

Int. Cl.[2] G10H *3/08*

U.S. Cl. 84—1.15 **4 Claims**



1. A pickup circuit for a guitar or the like comprising, in combination, a pair of coils, connected together at one end in series to provide a connection point, the opposite end of one of said coils connected to ground, said pair of coils being disposed in closely adjacent humbucking relationship as a single unit for positioning at a selected location on the guitar in close proximity to the strings, an output conductor connected to the opposite end of the other of said coils, a capacitor and a first potentiometer connected in series between said output conductor and said connection point forming a RC network, said potentiometer having a wiper connected to ground whereby the wiper serves as a signal input element, said wiper being movable progressively between one position for operation of the circuit as a full double coil humbucking pickup and a second position in which said one coil is grounded out and said other coil forms a single coil pickup.

4,164,164

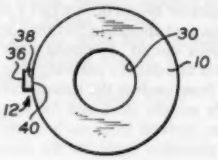
BOLT TENSION INDICATING MEANS

Emanuel H. Trungold, 14B Broun Place, Bronx, N.Y. 10475

Continuation-in-part of Ser. No. 704,768, Jul. 13, 1976, abandoned. This application Aug. 18, 1977, Ser. No. 825,558

Int. Cl.[2] F16B *31/02*

U.S. Cl. 85—62 **18 Claims**



1. In a bolt assembly of the type including as assembly components a bolt having a bolt head and stem, and a nut threadably engageable with said bolt stem, an improvement which comprises means for indicating that the stress on the bolt has reached a preselected level, said indicating means comprising an element located on one of said assembly components with one surface of the element coplanar with a bearing surface on said one component, the element being joined to said one component by adhesive having a predetermined stress failure which is reached when the bolt achieves said preselected stress level, whereby when the bolt is stressed to said preselected level, the adhesive joint fails thereby effecting movement of the element relative to said one component.

4,164,165

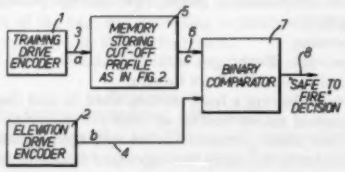
SAFETY APPARATUS FOR FIRING EQUIPMENT

Mervyn L. Bean, Darlington, and Samuel Price, Barrow-in-Furness, both of England, assignors to Vickers Limited, United Kingdom

Filed Aug. 9, 1977, Ser. No. 823,114

Int. Cl.[2] F41D *11/02*

U.S. Cl. 89—134 **2 Claims**



1. Safety apparatus for firing equipment which has a trainable and elevatable projectile guide, the safety apparatus comprising:

first and second angular position transducers for defining training and elevation angles of the projectile guide of the

firing equipment and for generating first and second binary numbers in accordance therewith;

an electrically readable memory for storing a set of values which indicate directions of firing which are safe with respect to mounting location the equipment;

a comparator means for, in use of the apparatus, addressing said memory with said first binary number derived from one of said first and second transducers and for comparing said second binary number derived from the other of said first and second transducers with a third binary number stored in the memory at the address corresponding to the first binary number so as to effect a determination of whether or not it is safe to fire at the particular training angle and the particular elevation angle of the projectile guide;

at least one further of pair transducers, at least one further electrically readable memory, and at least one further comparator means for effecting at least one further determination, simultaneously with the first-mentioned determination, as to whether or not it is safe to fire; and

fault checking circuit means for verifying the correct operation of the apparatus and for, responsive to the said comparator means, preventing firing of the equipment unless at least the first mentioned comparator means and said further comparator means both effect a determination that it is safe to fire, said apparatus further comprising a subsidiary comparator circuit associated with the transducers, and correction circuits for ensuring that the binary numbers derived from each of the transducers for defining the training angle are the same and for ensuring that the binary numbers derived from each of the transducers for defining the elevation angle are the same.

4,164,166

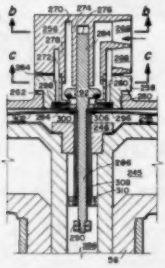
SOLAR ENERGY DEVICE

Harvard P. Stubbs, Chihuahua, Mexico, assignor to Solar Pump Corporation, Las Vegas, Nev.

Division of Ser. No. 751,105, Dec. 16, 1976. This application Mar. 9, 1978, Ser. No. 884,740

Int. Cl.[2] F01L *23/00, 31/02*

U.S. Cl. 91—342 **4 Claims**



1. A reciprocating motor operable by pressurized vapor comprising:

a housing;

a movable diaphragm within said housing that forms upper and lower chambers therein;

a piston having a head portion fixed to said diaphragm;

a control means having an inlet for receiving a vaporized fluid under pressure within said upper chamber and an outlet for releasing the vaporized fluid after movement of said piston;

said control means including a valve housing for a movable valve member;

spring means for biasing said valve member to close said outlet and open said inlet so as to cause vaporized fluid under pressure to fill said upper chamber and act on said diaphragm to move said piston in a power stroke of a cycle, said spring means being located within said upper chamber and comprising a relatively thin sheet of elastically flexible metal fixed to said valve member at a central location on said sheet and fixed to the inside of said housing at the edges of said sheet;

means responsive to a predetermined amount of piston movement during said power stroke for shifting the position of said valve member and of said spring means to close said inlet and open said outlet to release vapor pressure in said chamber, thereafter allowing said spring means to again bias said valve member to a closed position and

a tubular member fixed to and extending downwardly from said spring means adjacent said movable valve member, said tubular member having a flanged portion near its lower end for engaging a stop member on said valve member, thereby limiting the movement of said spring means.

4,164,167

HYDRAULIC SERVOMECHANISM

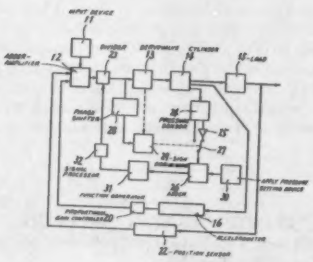
Isao Imai, and Mitsuru Muto, both of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1976, Ser. No. 744,106

Claims priority, application Japan, Nov. 21, 1975, 50-140076; Oct. 23, 1976, 51-127455

Int. Cl.[2] F15B *9/03, 9/09, 13/16*

U.S. Cl. 91—363 R **3 Claims**



1. A hydraulic servomechanism wherein an input device, an adder-amplifier, a divider, a servovalve, a piston within a cylinder and a load are operatively coupled in the order named; a position sensor for detecting a displacement of said load operatively connected to said adder-amplifier; means for detecting an acceleration of said piston operatively connected to said adder-amplifier, an adder, a supply pressure setting device having its output terminal connected to one of two input terminals of said adder, a pressure sensor with two output terminals for detecting a pressure difference across said piston in said cylinder having one of said two output terminals connected directly to one of two stationary contacts of a switching means and the other output terminals connected to the other stationary contact through an inverter, a movable contact of said switching means being connected to the other input terminal of said adder, the output of the adder being connected through a function generator to said divider, an output terminal of said divider being connected to said switching means through a sign discriminator so that in response to an output signal from said sign discriminator said movable contact of said switching means closes either of said two stationary contacts thereof.

4,164,168

VACUUM BOOSTER DEVICE

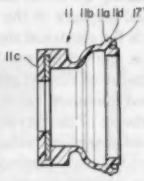
Kiyoshi Tateoka, Fujisawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Mar. 30, 1977, Ser. No. 782,783

Claims priority, application Japan, Apr. 13, 1976, 51-45727[U]

Int. Cl.[2] F15B *9/10*

U.S. Cl. 91—376 R 2 Claims



1. A vacuum booster device comprising a casing having two chambers therein a diaphragm in said casing between said chambers and separating them, a valve body slidably and sealingly disposed in the casing and connected to the diaphragm, a plunger slidably and sealingly disposed in the valve body, an input rod connected to said plunger, two valve seats respectively on the plunger and the valve body, and a resilient poppet valve for engaging or disengaging with the valve seats for connecting the two chambers with one another or disconnecting them and for connecting one of the chambers with or disconnecting it from the atmosphere, one end portion of the poppet valve being shaped as a generally cylindrical seal portion and being sealingly fitted and retained in the inner periphery of the valve body, and an annular projection on the outer periphery of the seal portion having a base with a dimension less than the axial dimension of said seal portion and in sealingly engaging contact with the inner periphery of the valve body.

4,164,169

AXIAL-PISTON MACHINE HAVING A CYLINDER DRUM AND A REVERSING DEVICE

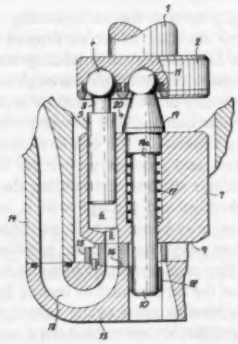
Wilfried Tragl, Aschaffenburg, and Franz Forster, Muhlbach, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,852

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642901

Int. Cl.[2] F01B *13/04*

U.S. Cl. 91—504 11 Claims



1. An axial-piston machine which comprises:

a housing;

a cylinder drum rotatable in said housing and provided with a plurality of angularly spaced cylinder bores each of which receives a respective reciprocatable piston;

a reaction surface inclinable relative to the axis of said drum and engaging said pistons, said drum having an end face opposite said reaction surface;

an intermediate disk between said face of said drum and said housing and formed at least on its side turned toward said housing with a spherical contact surface engaging a counter surface of said housing; and

means for pressurizing only one side of said drum through at least one passage formed in said disk, said contact surface having its center of curvature offset from the axis of said drum to the side thereof maintained under high pressure, said face of said drum overhanging beyond said disk at the side of said drum opposite said side maintained at high pressure whereby said cylinder bores discharge freely from the overhanging face of said drum into or draws fluid freely from a space provided in said housing around said drum.

4,164,170

METHOD OF MAKING BAGS

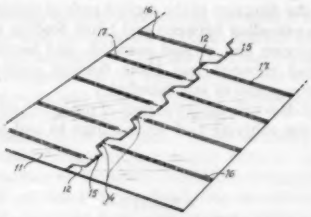
Kent A. R. Nordin, Rimbo, Sweden, assignor to Rimbo Tekniska Fabrik Rimpac AB, Rimbo, Sweden

Filed Feb. 16, 1978, Ser. No. 878,533

Claims priority, application Sweden, Feb. 17, 1977, 7701781; Mar. 30, 1977, 7703719

Int. Cl.[2] B31B *49/04*

U.S. Cl. 93—35 H 10 Claims



1. A method of making a string of bags from a blank comprising two layers of material joined together along at least three edges thereof, said method comprising the steps of cutting the layers of material along a line of wave-shape extending parallel to a pair of opposed edges, substantially centrally therebetween, the wave-tops and wave-bottoms of said wave-shape being uniformly spaced apart; displacing the thus obtained blank halves axially relative to one another in a manner such that a wave-bottom coincides with an adjacent wave-top to form an opening of regular geometric shape; welding the material along a line extending centrally between adjacent openings to form bag handles; welding the material along further lines extending perpendicularly to said firstmentioned line and being uniformly spaced apart by a distance equal to the desired width of the bag; and providing separation lines adjacent to and parallel with said further lines.

4,164,171

CARTON FORMING APPARATUS

George L. Meyers, Menasha, and Thomas M. Gorshe, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 25, 1977, Ser. No. 845,224

Int. Cl.[2] B31B *1/26*

U.S. Cl. 93—49 R 7 Claims

1. Apparatus for forming carton blanks into tubular carton shells each having at least one shell sealing flap on a lateral portion thereof, comprising;

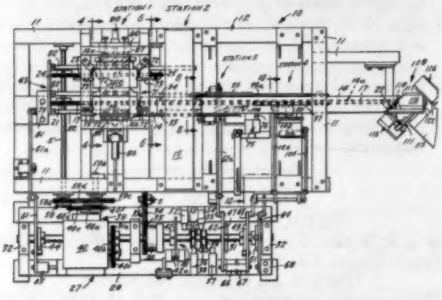
means defining serially disposed stations through which said carton blanks sequentially may be moved;

incrementally driven conveyor means for moving said carton blanks through said stations with a pause at each said station;

means defining a mandrel extending along the path of movement of said conveyor means, and on which said carton blanks are formed into carton shells;

means for sequentially forming shells on said mandrel as said carton blanks are moved by said conveyor means;

carton blank feeding means for delivering individual carton



blanks to said conveyor means upon incremental drive thereof;

said conveyor means comprising first and second sections extending in substantially parallel, mutually spaced relation in the direction of the recited path of travel, said first section extending between said blank feeding means and the upstream end of said mandrel, said second section extending between said blank feeding means and the downstream end of said mandrel;

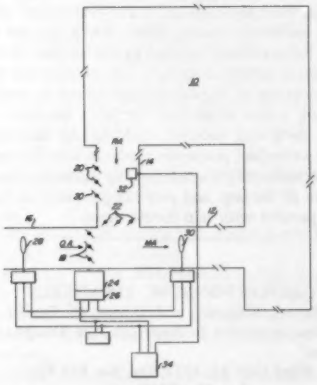
and means disposed along the path of travel of said conveyor means for adhering said sealing flaps to seal said carton shells.

4,164,172

METHOD AND APPARATUS FOR VENTILATING AN OCCUPIED SPACE

John R. Anderten, Denver, and Glen O. Peter, Northglenn, both of Colo., assignors to Energy Controls, Inc., Denver, Colo.

Filed Feb. 23, 1978, Ser. No. 880,841
Int. Cl.[2] F24F *11/02*
U.S. Cl. 98—33 R **4 Claims**



1. In a heating, ventilating and cooling system for an occupied space, the air for such a space being supplied through an inlet duct, the air removed from the space flowing through a return air duct, an outdoor air damper for admitting outside air into the inlet duct when open; an exit air damper for permitting return air to be exhausted to the atmosphere when open; a return air damper for permitting return air to flow into the inlet duct when open; a damper motor connected to the outdoor, the exit and the return air dampers to position the dampers to control the amount of outside air introduced into the inlet duct; and damper motor control means for causing the damper motor to position the dampers, the improvements comprising:

means for sensing the partial pressure of the oxygen in said space and for producing an electrical signal which is a function of the partial pressure of the oxygen;

control means to which the electrical signal from the means for sensing oxygen is applied for producing a first signal when the partial pressure of the oxygen decreases below a certain predetermined minimum value and a second signal when the partial pressure of the oxygen increases above a second predetermined maximum value; and

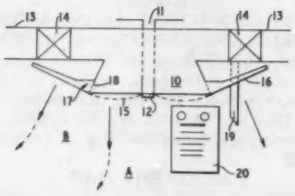
means for applying said signals produced by said control means to said motor control means, said motor control means in response to said first signal being produced causing said damper motor to position the dampers to increase the amount of outside air introduced and in response to said second signal being produced causing said damper motor to position the dampers to decrease the amount of outside air introduced to maintain the partial pressure of the oxygen of the air in the occupied space substantially between the maximum and minimum predetermined values.

4,164,173

AIR SUPPLY SYSTEMS FOR OPERATING THEATRES

Andrew S. M. Douglas, "The Hollies", Hollin La., Styal, Cheshire, England

Continuation of Ser. No. 772,957, Feb. 28, 1977, abandoned.
This application Apr. 5, 1978, Ser. No. 893,249
Int. Cl.[2] F24F *9/00*
U.S. Cl. 98—36 **5 Claims**



1. An air supply system for an operating theatre which includes a primary chamber to which filtered air is supplied under pressure, a first membrane extending across the lower surface of the primary chamber and through which, in use, a relatively high velocity downward airflow is obtained, a secondary chamber surrounding the primary chamber with a second membrane separating the primary chamber from the secondary chamber, said secondary chamber having a downwardly facing diffuser surface surrounding the lower surface of the primary chamber and through which, in use, a further downward airflow is obtained which surrounds the airflow issuing from the primary chamber, the relative values of the porosities of the first and second membranes being so chosen that the velocity of the further airflow issuing from the secondary chamber is at least as great as the velocity of the airflow issuing from the primary chamber, and the downwardly facing diffuser surface being inclined upwardly as it extends radially outwardly from the lower surface of the primary chamber, so that said further airflow through the diffuser surface has a radially outward component.

4,164,174

METHOD OF PREPARING FOODSTUFFS BY MEANS OF BOILING OR STEAMING AND MEANS FOR PERFORMING THE METHOD

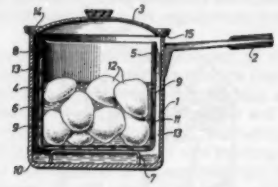
Hans I. Wallstén, Chemin de la Lisiere 6, CH-1018 Lausanne, Switzerland

Filed May 19, 1976, Ser. No. 687,707

Claims priority, application Switzerland, Nov. 12, 1975, 126888/75

Int. Cl.[2] A47J *37/12*

U.S. Cl. 99—415 14 Claims



1. Apparatus for use with a cooking vessel and including a removable lid for heating solid and liquid foodstuffs either separately or together while spacing the foodstuff from the bottom and walls of the cooking vessel used to heat the foodstuff comprising:

said vessel having an upper open end for receiving the removable lid and adapted to receive and contain water for heating;

a holder received by said vessel and having a bowl-shaped perforated portion and an upper portion for supporting the holder in said vessel so that the side wall and bottom of the bowl-shaped perforated portion are respectively spaced from the side wall and bottom of said vessel;

an insert positioned in said holder;

said insert being a liquid-tight bowl-shaped disposable plastic member thermoformed so as to have a thin bowl-shaped body defined by a continuous side-wall and an integral bottom;

the upper part of said bowl-shaped body being formed with an integral annular flange disposed generally outward and away from said insert wall and shaped to at least partially engage the upper edge of said holder, said flange being semi-rigid and sufficiently strong such that it cooperates with said thin bowl-shaped body to support and hold said insert upon the holder without the need for any additional holding means when said flange is in engagement with the upper edge of said holder;

the continuous side-wall and integral bottom of the insert bowl-shaped body conforming respectively to the side wall and bottom of the holder to smoothly and substantially intimately engage the inner surface of the holder without having to be folded, enabling the heated fluid in the vessel and located between the vessel and the holder to intimately engage substantially the entire exterior bowl-shaped surface of the insert, the thickness of the insert being chosen to maximize heat transfer to the foodstuff through the insert.

4,164,175

BROILERS AND ELECTRIC HEATERS THEREFOR

Norman Burstein, Cherry Hill, and Richard C. Ditzler, Glendora, both of N.J., assignors to Ultra-Heat Corporation, Cinnaminson, N.J.

Filed Dec. 1, 1977, Ser. No. 856,606

Int. Cl.[2] A47J *27/00;* H05B *3/30*

U.S. Cl. 99—446 18 Claims

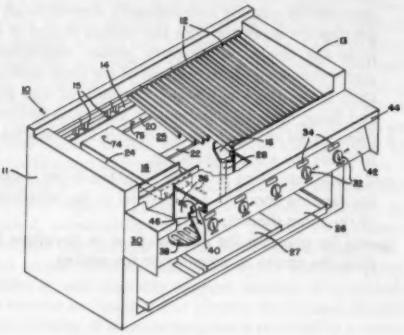
1. An electric cooker for flare broiling of meats containing fats, said cooker comprising a housing, a grate mounted within said housing for supporting meats to be broiled; a high temperature heater block mounted under said grate; and means for energizing said heater block;

said heater block including:

a plurality of ferrous bodies having mating clamping faces, said face of one of the bodies having a small groove therein,

and a heater element including a ferrous sheath and a high resistance heater wire in said sheath, said sheath having linear and cross-sectional shapes substantially similar to corresponding shapes of said groove,

said one body having a large outer surface extending under said grate to receive melted fats dripping from the broiling meat,



and said heater element sheath being mounted in said groove and the high temperature portions thereof clamped between said bodies to be fully enclosed thereby and isolated from contamination by dripping fats and so that heat developed in said heater element is transferred over the large outer surface of said one body;

and said heater block energizing means including means for electrically energizing said heater wire to operate said outer surface of the heater block at a temperature above 1200° F., so that dripping fats falling on said outer surface flare up and, in the burning thereof, contribute heat to the broiling of the meat,

whereby said cooker tends to be energy efficient and to avoid deterioration of said heater element by contaminants in the cooking environment.

4,164,176

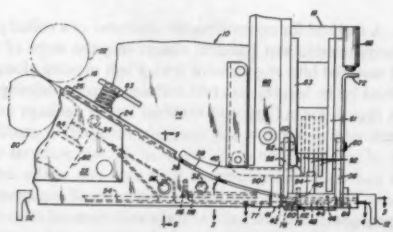
STRAPPING MACHINE WITH STRAP STOP BARRIER, PIVOTABLE CLAMP AND ADJUSTABLE SHEAR ANVIL

S. Bernard Brouse, Orland Park, and John Wiedel, Chicago, both of Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1978, Ser. No. 879,645

Int. Cl.[2] B65B *13/04*

U.S. Cl. 100—4 5 Claims



1. In a strapping machine including feed means for longitudinally feeding a free end of strap to form a loop about an article

so that a portion of said strap is overlapping, clamping means for holding the strap near the free end, tensioning means for tightening the loop, sealing means for securing the overlapped strap portions, and shearing means for cutting the formed loop from the remaining strap, said machine having an entry guide, a loop track, and a re-entry guide,

the improvement in said machine which further comprises:

a barrier for stopping travel of the strap within the sealing means as received from the re-entry guide so as to control the extent of overlapping strap portions therein,

a sensor activated by said barrier for terminating operation of the feed means, and,

a guideplate having separate parallel tracks in overlying relationship running longitudinally therethrough for conducting the strap through the sealing means as received from the entry and re-entry guides respectively, said tracks enclosing about one half of the cross section of said strap along the longitudinal direction of said guideplate and being open on the opposite half cross section,

a guide means spaced from the open side of said tracks so as to guide the strap therealong,

said guideplate being pivotally mounted to the sealing means for rotation about an axis parallel to the longitudinal axis of the strap therein; and

means for pivoting the guideplate so as to release the strap from the tracks in preparation for sealing.

4,164,177

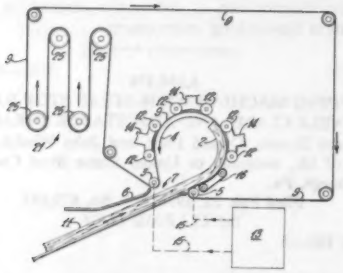
METHODS AND APPARATUS FOR ROLLING MATERIAL INTO A PACKAGE

Sheldon A. Canfield, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 7, 1978, Ser. No. 940,225

Int. Cl.² B30B *13/00, 5/06*

U.S. Cl. 100—40 **32 Claims**



1. A method for controlling the diameter of a rolled package of compressible mat material comprising the steps of feeding said material into engagement with a belt moving along a path defined by its length, said belt defining a roll-confining collection region for rolling said material into a package and from which said package is subsequently released, controlling the rate of said belt upon engagement of the said material with the belt and upon disengagement from said belt at the collection region, controllably altering the said rates of engagement and disengagement of said belt with the said material from the time of engagement of the said material with the said belt, determining when the said rolled package has reached a predetermined size and releasing the said package from the said collection region whereby a desired size rolled package is produced.

4,164,178

CONTAINER, CLOSABLE BY A LID, FOR RECEIVING AND COMPRESSING WASTE

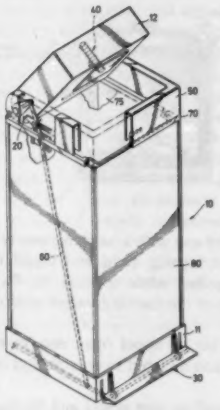
Manfred Baumann, and Walter Besserer, both of Diepoldsau, Switzerland, assignors to Apura GmbH, Mainz-Kostheim, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,452

Claims priority, application Switzerland, Apr. 19, 1977, 004858/77

Int. Cl.² B30B *1/04*

U.S. Cl. 100—99 **25 Claims**



1. A container for waste material such as paper or the like, comprising,

a casing forming a stationary container for waste material and including a top structure defining an opening for entry into the container,

a lid pivotally mounted at one end on the casing adjacent the opening for movement between an open position allowing waste to be put into the stationary container through the top structure, and a closed position closing the opening of the container,

the lid being integrally formed with a downwardly projecting portion that, in the closed position, extends into the stationary container beyond the upper extremity of said top structure to compressively occupy a volume within the container at least equal to that of an item of waste for which the container is intended, and

means for releasably retaining the lid in its closed position.

4,164,179

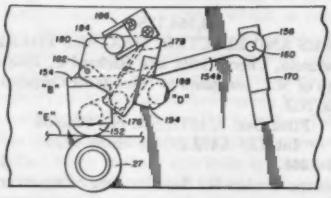
DEPOSITORY SYSTEM

Richard S. McLaughlin, Dallas; Walter Plaski, Irving, and Robert F. Swartzendruber, Plano, all of Tex., assignors to Docutel Corporation, Dallas, Tex.

Division of Ser. No. 516,592, Oct. 21, 1974, Pat. No. 4,067,267. This application Jul. 1, 1977, Ser. No. 812,258

Int. Cl.² B41J *1/44*

U.S. Cl. 101—76 **3 Claims**



1. A character printer in an automatic document depository

having a supporting frame and wherein transport means moves the document to a print station, comprising:

A printhead assembly having one end rotatably mounted to the supporting frame of said document depository,

a printing machine having sequentially varying characters and attached to the printhead assembly at a position displaced from one end,

a carrier housing pivotally mounted to said printhead assembly and having at least one side (end plate) extending past (one side of) said printing machine, said carrier housing including a cam roller as a part thereof,

a first cam follower attached to the supporting frame in a fixed position relative to the rotatably mounted one end of said printhead assembly and in engagement with said cam roller,

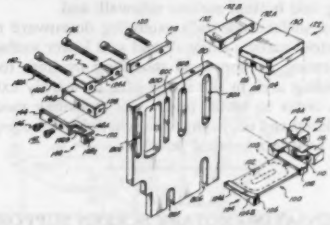
a second cam follower as an integral part of the one side (plate) of said carrier housing at a position displaced from (the one side of) said printing (print) machine, an indexing lever connected to said printing machine and in engagement with the second cam follower, said indexing lever to be actuated by the cooperation of said indexing lever with said second cam follower to sequentially vary the character arrangement of said printing machine, and means for rotating said printhead assembly from a first position to a second position to move said printing machine into (in) contact with a document at the print station, and to pivot said carrier housing by cooperation of the cam roller with said first cam follower thereby indexing said printing machine by actuating said indexing lever through cooperation with the second cam follower.

4,164,180

IMPACT PRINTER INCLUDING HAMMER BANK ASSEMBLY

Larry P. Ellefson, Seattle; Robert J. Brooks, Woodinville; Kenneth G. Real, Redmond, and John A. Manthey, Kirkland, all of Wash., assignors to Interface Mechanisms, Inc., Mountlake Terrace, Wash.

Filed Sep. 29, 1977, Ser. No. 837,829
Int. Cl.[2] B41J *9/30*
U.S. Cl. 101—93.34 **10 Claims**



1. An improved hammer bank assembly for use in impact printers, said hammer bank assembly comprising:

(a) a plurality n of magnet modules, each of said plurality of magnet modules including at least one substantially flat permanent magnet;

(b) an assembly support member;

(c) first means securing said plurality of magnet modules to said assembly support member in a spaced-apart manner so that said permanent magnets are parallel to each other and define a plurality of air gaps, each said air gap being located between adjacent ones of said plurality of permanent magnets;

(d) a plurality of n−1 of hammer modules, each of said plurality of hammer modules including

a substantially flat body containing an electrical coil, said body having first and second ends,

a hammer head attached to said first end and coplanar with said body, said hammer head having a first portion, of substantially elongated, rectangular configuration, and a second portion integral with and tapering outwardly from said first portion, and a hammer face projecting from said second portion;

a base attached to said second end, and a pair of electrically-conductive spring members secured to and extending from said base, said pair of electrically-conductive spring members being interconnected with said electrical coil;

(e) a plurality of n−1 of hammer support members, each of said plurality of hammer support members receiving a corresponding said pair of electrically-conductive spring thereby support one of said plurality of hammer modules for pivotal movement in a predetermined plane;
ment in a predetermined plane;

(f) second means securing said plurality of hammer support members to said assembly support member in a spaced-apart manner so that said bodies of said plurality of hammer modules are parallel to each other and so that said bodies are located in corresponding ones of said plurality of air gaps, whereby each of said hammer modules is free to pivot in its predetermined plane upon application of an electrical signal to said electrical coil via said pair of electrically-conductive spring members;

(g) a plurality n−1 of hammer guide members, each of said plurality of hammer guide members defining therein an elongated, substantially rectangular groove complementary to said first portion of each said hammer head; and

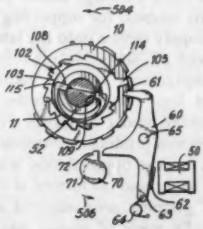
(h) third means securing said plurality of hammer guide members to said assembly support member in a spaced-apart manner so that said first portion of said head of each of said plurality of hammer modules is received in a corresponding one of said grooves, the dimension of each said groove in a direction transverse to the predetermined plane of hammer movement being larger than a corresponding dimension of said first portion but small enough so that said first portion contacts said hammer support member upon deflection of said hammer module in directions transverse to its predetermined plane before the associated body contacts either of said adjacent ones of said plurality of permanent magnets.

4,164,181

PRINTER

Seiji Hanaoka, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha, both of Tokyo, Japan

Continuation-in-part of Ser. No. 575,814, May 9, 1975, Pat. No. 4,033,256. This application Jul. 1, 1977, Ser. No. 812,301
Claims priority, application Japan, May 9, 1974, 49-51470
The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.
Int. Cl.[2] B41J *1/44*
U.S. Cl. 101—99 **7 Claims**



1. An improved printer for printing a web of paper comprising rotatable drive shaft means, at least one character ring having a plurality of characters on the periphery thereof, each said character ring being supported on said drive shaft means, spring coupling means having a pair of opposed ends that are resilient with respect to each other, said spring coupling means

being mounted to each said character ring for engaging said drive shaft means, each said character ring having a ratchet wheel disposed thereon, pawl means associated with each said character ring, each said pawl means being coordinately displaceable between a rest position and a print position, means for coordinately displacing each of said pawl means between said rest and print positions, each said pawl means being adapted to engage said ratchet wheel on said associated character ring when said pawl means is in said print position to thereby stop the rotation of said character ring, said spring coupling means permitting said drive shaft means to continue rotating after said character ring is stopped, and including a projection on each of said opposed ends of said spring coupling means for engaging said drive shaft means, the distance between said first and second projection being α, said diameter of said drive shaft means being β, and $\alpha \leqq \beta$.

4,164,182

CARTRIDGE-TYPE INK SUPPLY DEVICE FOR LABELING MACHINES

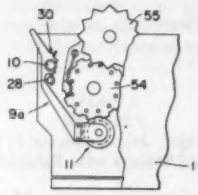
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Division of Ser. No. 663,693, Mar. 4, 1976, Pat. No. 4,083,300, which is a continuation-in-part of Ser. No. 539,842, Jan. 9, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,228

Claims priority, application Japan, Mar. 6, 1975, 50-26525

Int. Cl.[2] B41F *1/46, 1/02*

U.S. Cl. 101—103 **1 Claim**



1. In an ink supply device for supplying ink onto a type surface of a printing mechanism of a labeling machine, said printing mechanism being used for printing inscriptions on each of a series of labels fed by indexed movement along a travel path thereof within the machine, said ink supply device comprising an ink roller cartridge holder provided at one end thereof with a part adapted for supporting and attaching detachably the ink supply device onto the labeling machine and at the other end with a U-shaped inking roller support adapted for detachably engagement with an inking roller cartridge having therein at least one inking roller: an improvement wherein said cartridge holder comprises a traverse pin fixedly supported adjacent said printing mechanism parallel to the axis thereof and between the opposed side walls of the labeling machine frame, a fingerhold tab formed at one end thereof and at least a pair of gripping jaws adjacent said fingerhold tab which are integrally made of plastic material for relatively loose gripping or clamping engagement with said transverse pin; and spring means adapted for urging said jaw part against said traverse pin; said cartridge holder being easily and securely mountable on and easily dismountable from said traverse pin as said gripping jaws are manipulated into and out of gripping engagement with said traverse pin by grasping said fingerhold tab.

4,164,183

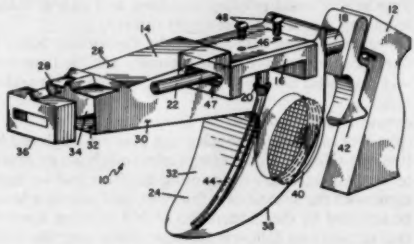
STENCILING APPARATUS HAVING IMPROVED CASING STRUCTURE

Gregory G. A. Peck, 165 Evergreen Dr., Gorham, Me. 04038

Continuation-in-part of Ser. No. 629,650, Nov. 6, 1975, Pat. No. 4,048,918. This application Sep. 19, 1977, Ser. No. 834,708

Int. Cl.[2] B41F *15/36*

U.S. Cl. 101—114 **5 Claims**



1. An improved casing for a stenciling apparatus of the type containing a stenciling medium therein to be delivered by means of a compressed air stream to a surface to be marked having the upper rear portion of the casing adapted to accommodate therein a housing incorporating the convergence of means for compressed air supply delivery, means for stencil medium pickup and means for stencil medium delivery to said surface, said casing having a forward portion formed by an upper surface sidewall, a bottom surface sidewall and a pair of sidewalls all forming at said forward portion a substantially rectangular aperture aligned to oppose said rear portion of said casing and the stenciling medium delivery means wherein the improvement comprises:

said bottom surface sidewall extending from said rectangular aperture rearward at an incline and at a position below said housing curving abruptly downward and then forward at its lower extent;

a lower rear sidewall extending from the upper rear portion of said casing downward in a forwardly bowed curve meeting said bottom surface sidewall; and

said pair of surface sidewalls extending downward meeting said bottom surface sidewall and said lower surface sidewall forming an improved stenciling medium recycling and holding area in the shape of a forwardly extending cusp in order to better retain said stenciling medium in said holding and recycling area when the stenciling apparatus is used in a vertical position.

4,164,184

COMPENSATING ROTARY SCREEN SUPPORTS

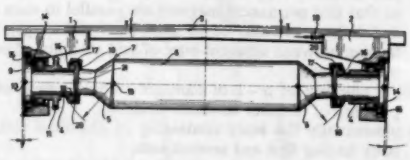
Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Brabrant B.V., Boxmeer, Netherlands

Continuation of Ser. No. 633,154, Nov. 18, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 782,291

Claims priority, application Netherlands, Dec. 2, 1974, 7415717

Int. Cl.[2] B41F *15/38*

U.S. Cl. 101—127.1 **5 Claims**



1. Improvement in a rotary screen printing machine with a supporting structure mounted on a frame of the machine for

supporting at least one cylindrical stencil having two end rings each being mounted to a respective end the stencil via a circular connecting area, the supporting structure comprising:

two stationary members supported by said frame, said stationary members being arranged so as to be positioned on opposite sides of a supported stencil;

two sleeves, each coupled to a respective one of said stationary members and connected with a respective end ring of the stencil;

the improvement comprising the combination of:

self-aligning bearings between each stationary member and each sleeve for rotatably supporting the stencil; and

universal coupling means between the end rings of the stencil and said sleeves so as to allow the end rings to undergo a universal tilting movement about a central point in the connecting area of the stencil with each of its end rings so that the centre line of the stencil is free of lateral displacement,

said universal coupling means formed by the provision of complementary cooperating spherical surfaces on each of said sleeves and the corresponding said end ring of said stencil in the area of the connection between said sleeve and said end ring.

4,164,185

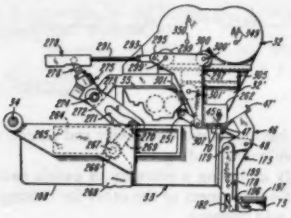
INKING MECHANISM

Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 396,932, Sep. 13, 1973, abandoned, Continuation-in-part of Ser. No. 215,783, Jan. 6, 1972. This application Jul. 11, 1977, Ser. No. 814,612

Int. Cl.[2] B41F *1/50, 31/08*

U.S. Cl. 101—348 **7 Claims**



1. An inking mechanism, comprising: a shaft, an ink roll secured to the shaft, means for driving the shaft, a pump for supplying ink to the ink roll, the pump including a pump body having a bore and an ink inlet opening into the bore, a curved tube communicating with the pump body, a helical spring secured to the shaft, rotatable in the tube and having a portion extending into the bore, a straight rod disposed substantially only within the portion of the spring in the pump body, the outside diameter of the rod being greater than the internal diameter of the spring before the rod is inserted into the spring so that when the rod is inserted into the spring the spring grips the rod and the rod and the spring are rotatable as a unit, and means for driving the spring and the rod as a unit, there being only slight clearance between the spring and the bore so that as the spring and the rod rotate, ink between the rod and the bore and between the coils of the spring is conveyed upwardly.

4,164,186

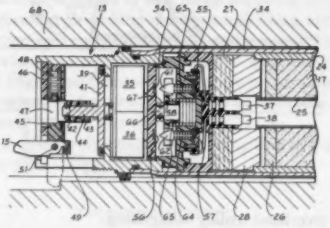
SUBMARINE SIGNAL FUZE

Bobby D. Beatty, Bloomfield; Russell D. Daniel, Bloomington, and Billy J. Humerickhouse, Odon, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 21, 1977, Ser. No. 844,328

Int. Cl.[2] F42B *4/26*

U.S. Cl. 102—37.8 **3 Claims**



1. A signaling device adapted to be launched in a body of sea water beneath the surface thereof comprising,

a fuze body having an inner chamber, and an aperture communicating therewith,

a projectile shell attached to said fuze body and containing a pyrotechnic composition therein,

at least one electrical squib having first and second leads for igniting said pyrotechnic composition when said squib is energized,

at least one sea water battery having output terminals and being positioned in said inner chamber,

valve means in said fuze body normally closing said aperture communicating with said inner chamber of said fuze body from said body of sea water,

a latching assembly for locking said valve means in a closed position prior to launching said signling device,

first and second spaced apart stationary electrical contacts,

a movable breaker plate,

at least one contact attached to said movable breaker plate,

first circuit means connecting one battery output with said first stationary electrical contact and second circuit means connecting the other battery output with said second stationary electrical contact, third circuit means connecting one squib lead to said second stationary electrical contacts and fourth circuit means connecting the other squib lead with said contact attached to said movable breaker plate,

means for moving said movalbe breaker plate whereby said at least one contact attached to said movable breaker plate is engageable with said first stationary electrical contact to connect said sea water battery with said squib,

stop means for preventing movement of said circuit breaker plate when said valve means is closing said aperture, and

a coil spring engageable with said second stationary contact and with said contact on said movable breaker plate for shorting said first and second squib leads, said coil spring being insufficient in length to contact both said second stationary contact and said contact on said movable breaker plate when said contact on said movable breaker plate engages said first stationary contact.

4,164,187

MOTORIZED OVERHEAD TROLLEY

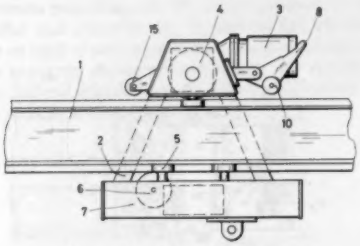
Karl E. Kaufmann, Wetter, Fed. Rep. of Germany, assignor to DeMag Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,609

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1976, 2618516

Int. Cl.[2] **B61B** *3/02;* **B61C** *3/00, 13/06;* **B61F** *11/00*

U.S. Cl. 104—93 **9 Claims**



1. An overhead trolley comprising

(a) a rail;

(b) a trolley body for travel on said rail;

(c) a drive wheel on said trolley body engaging said rail;

(d) a drive motor connected to said drive wheel; the improvement characterized by

(e) a rocker arm pivotally mounted on said trolley body;

(f) an auxiliary wheel mounted on said rocker arm;

(g) said auxiliary wheel pivotal on said arm from a position away from said rail to a position engaging said rail;

(h) the pivot axis of said rocker arm being at a distance from said rail less than the pivot axis of said drive wheel;

(i) whereby said rail engaging position of said auxiliary wheel raises said body with said drive wheel away from said rail; and

(j) support means on said trolley body and spaced from said auxiliary wheel;

(k) said support means engaging said rail in the raised position of said drive wheel;

(l) whereby the auxiliary wheel and support means hold the drive wheel in elevated position when said auxiliary wheel and support means engage the rail.

4,164,188

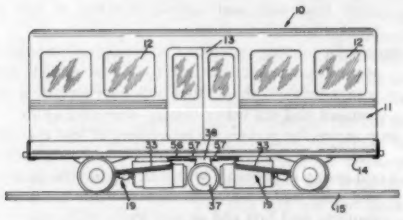
SELF STEERING RAILWAY CAR

Keith J. Hallam, Merrillville, Ind., and Willis H. Knippel, Palos Park, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed May 26, 1977, Ser. No. 800,687

Int. Cl.[2] **B61C** *3/00;* **B61F** *3/04, 5/22, 5/46*

U.S. Cl. 105—166 **26 Claims**



1. A railway car having a body,

an under frame for supporting said body including a chassis,

a sub-frame assembly at each end of the chassis,

each sub-frame including a first axle and drive wheels supporting the chassis,

means connecting each sub-frame assembly for turning movement relative to said chassis for guided engagement with associated tracks,

a second axle and wheel assembly positioned between said sub-frames,

guide means slidingly guiding said second axle and wheel assembly for transverse movement relative to said chassis, said guide means including a guide element extending transversely of said chassis, and said second axle and wheel assembly including a guided yoke member supported by said second axle with means on said guided yoke member engaging said guide member in slidingly guided relation during relative transverse movement whereby positive engagement of said second axle and wheel assembly with associated tracks is assured, and

a steering beam assembly directly connected to said second axle and wheel assembly and longitudinally projecting therefrom toward respective sub-frame assemblies and directly operatively connected to each of said sub-frames and movable in a substantially constant horizontal plane with said second axle and wheel assembly transversely relative of the car in response to track curvature and turning said sub-frames for steering said drive wheels.

4,164,189

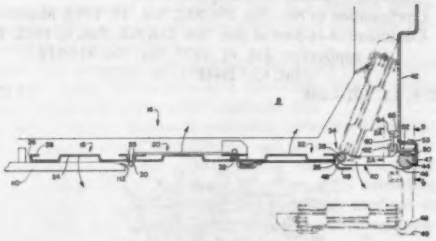
DOOR ASSEMBLIES FOR CLOSING RAIL CAR END OPENING

William E. Fritz, Longwood, Fla.; Mark L. Graves, Munster, Ind., and Robert F. Seitz, Mentor, Ohio, assignors to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Mar. 8, 1976, Ser. No. 664,913

Int. Cl.[2] **B61D** *19/00;* **E05B** *65/14*

U.S. Cl. 105—378 **10 Claims**



1. In a rail car having an interior cavity and an end opening for loading and unloading lading:

a door assembly including a plurality of panels each pivotally movable with respect to the other for closing at least a portion of said opening,

lock means,

mounting means including a double vertical pivot means in addition to the pivot means making the panels each pivotally movable with respect to the other, for moving said door assembly between a stored position with the panels folded back upon one another as a unit at least partially within said cavity and a closed position in which said panels may be locked in substantially co-planer relationship,

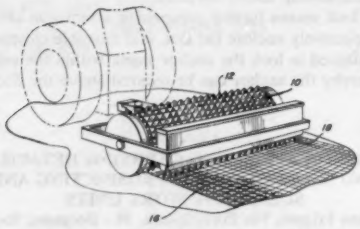
said double vertical pivot means are cranks journalled at both ends, the first portion of said double vertical pivot means operable for pivoting of the door assembly about a first vertical axis adjacent the opening defining the end edge of the car side wall and the second portion of said double vertical pivot means operable for pivoting of the door about a second vertical axis laterally spaced from the first and located adjacent the outmost edge of the outermost panel.

4,164,190

SEED PLANTING METHOD FOR CEREAL GRAINS AND GRASSES

Dwight C. Newman, R.R. 1, Culver, Ind. 46511

Filed Oct. 29, 1976, Ser. No. 736,894
Int. Cl.[2] A01C *5/00;* A01B *29/00*
U.S. Cl. 111—1 18 Claims



1. The method of planting seeds of cereal grains in a pattern comprising a plurality of longitudinal and transverse rows of seed planting sites, the transverse rows crossing the longitudinal rows, the improvement comprising, in combination: impressing a series of separate depressions in the ground in which each depression defines a generally variable depth, tapering to an apex area of maximum depth, in which the depressions have essentially common base sides at the ground surface with each adjacent depression along both the transverse rows and longitudinal rows, said apexes of the depressions being positioned in said longitudinal and transverse rows, and being spaced from 1½ to 2½ inches apart along said longitudinal rows and 1½ to 2½ inches apart along said transverse rows so as to be essentially equally spaced in both directions along said longitudinal and transverse rows; and thereafter placing cereal grain seed into said depressions, whereby said cereal grain seeds tend to be positioned adjacent the apexes of the depressions, to be spaced from each other in a manner corresponding to the spacing of said apexes.

4,164,191

SEWING MACHINE MOTOR ACTUATED PNEUMATIC PUMP FOR NEEDLE THREADING

Wesley R. Peterson, Bound Brook, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 17, 1978, Ser. No. 952,509
Int. Cl.[2] D05B *69/10, 69/18, 87/00*
U.S. Cl. 112—225 3 Claims

1. In a sewing machine having a main drive for imparting motion to stitch forming instrumentalities, including a needle bar arranged for reciprocatory motion having a thread carrying needle attached to one end thereof, an electric motor having a rotational drive shaft, and operative connections with said motor drive shaft for imparting rotation to said main drive;

a pneumatic needle threading assist, a pneumatic pump for providing a flow of air through said pneumatic needle threading assist, and a pump actuating mechanism including operative connections with said motor drive shaft including:

a first overriding clutch means arranged in said operative connections for operating said sewing machine main drive, said first overrunning clutch means being arranged to engage said motor with said main drive when said motor is operated in a first direction compatible with the operation of said sewing machine instrumentalities, and to disengage said motor from said main drive when said motor is operated in a second direction, oppositely from said first direction;

a second overriding clutch means arranged in said operative connections included in said pump actuating mechanism, said second overrunning clutch means being arranged to disengage said motor from said pump actuating mechanism when said motor is operated in said first direction, and to engage said motor with said pump actuating mechanism when said motor is operated in said second direction; and

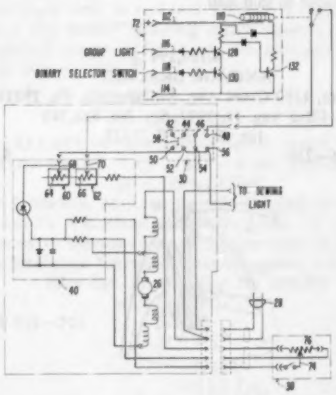
means for selectively changing the direction of rotation of said motor.

4,164,192

SEWING MACHINE MOTOR SPEED LIMITING BY PATTERN SELECTION

John A. Herr, Garwood; Jack Brown, Union; Wesley R. Peterson, Bound Brook, and Wolfgang Jaffe, Roselle Park, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,220
Int. Cl.[2] D05B *3/02, 69/18*
U.S. Cl. 112—158 E 5 Claims



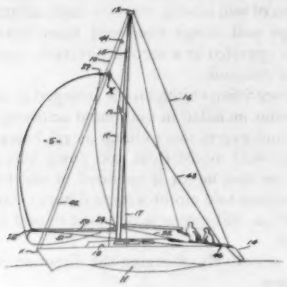
1. In a zig-zag sewing machine having stitch forming instrumentalities, including a thread carrying needle and a work feeding mechanism, a motor for driving said stitch forming instrumentalities, electronic means for selectively controlling said stitch forming instrumentalities in accordance with preprogrammed stitch patterns, and a motor speed control having at least a high speed range and a slow speed range, a switch for selecting between said high speed range and said slow speed range, means for automatically limiting the maximum speed of said sewing machine motor to said slow speed range with certain of said selected stitch patterns comprising:

means for sensing the selected stitch pattern;

means for determining whether speed limiting is necessary, and

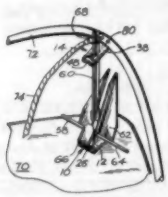
means for selecting said slow speed range.

4,164,193
ADJUSTABLE SPINNAKER HEADER AND RIG THEREFOR
Milton B. Smith, 1253 N. Bundy, Los Angeles, Calif. 90049
Filed Oct. 31, 1977, Ser. No. 847,003
Int. Cl.[2] B63H *9/10*
U.S. Cl. 114—111 **30 Claims**



1. A spinnaker header for supporting a spinnaker sail and adjustable as to height along a forestay extending to a mast projecting aloft from a sailboat hull, and including; centering means guiding the header along the forestay, spinnaker coupling means securing the head of the spinnaker to the header and receiving the pulling force from said spinnaker, halyard coupling means securing a halyard line to the header to raise the header, downhaul coupling means securing a downhaul line to the header to lower the header, the said halyard line and said downhaul line cooperating to position the said header as to height along the forestay, and a backhaul coupling means securing the header to the boat hull to transfer pulling force from the header to said hull.

4,164,194
ANCHOR BRACKET
John C. Kurz, 1250 Grant Ave., Philadelphia, Pa. 19115
Filed Aug. 11, 1977, Ser. No. 823,743
Int. Cl.[2] B63B *21/22*
U.S. Cl. 114—210 **5 Claims**



1. In an anchor bracket for supporting an anchor including a shank, a pivot bar and flukes above the deck of a boat, the combination of

base support means to support the anchor,

said base support means comprising at least one support leg adapted to receive a first part of the anchor,

said support leg including a body extending above the deck, said body being upwardly formed to provide a cradle,

said cradle being spaced above the deck and being configured to receive and support the anchor pivot bar in spaced relationship above the deck; and

lock means affixed above the base support means to engage the shank part of the anchor,

said lock means being adapted to support the shank in substantially vertical position,

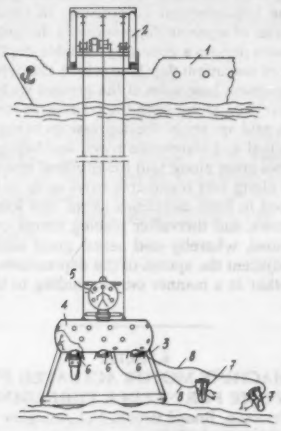
at least a part of the lock means being affixed in substantial vertical registry above at least a part of the base support means,

the lock means comprising a body having a base and a pair of lock legs extending from the base, the lock legs defining a slot therebetween, the slot being adapted to receive and retain a portion of the anchor shank therewithin to support the shank in substantially vertical relationship above the deck,

.he lock means further comprising a movable closure to selectively enclose the slot, said movable closure being adapted to lock the anchor shank within the said slot,

whereby the anchor can be secured above the deck.

4,164,195
IMMERSION APPARATUS CARRYING DETACHABLE AND SELF-CONTAINED PROSPECTING AND SUBMARINE WORK UNITS
Gianfranco Frigeni, Via Portadipinta, 38 - Bergamo, Italy
Filed Jun. 23, 1978, Ser. No. 918,435
Claims priority, application Italy, Jul. 29, 1977, 2923 A/77
Int. Cl.[2] B63G *8/24*
U.S. Cl. 114—322 **5 Claims**



1. An immersion apparatus for carrying out submarine works, associated with a surface unit with sea lowering systems on said surface unit and connected through cables to the immersion apparatus, comprising a master chamber guided and driven by means of tensioned constant force cables to the proximity of operation site or location, on said master chamber a coupling and transfer assembly at the bottom thereof with at least one coupling chamber designed to form a watertight chamber, each of which is provided with a pump for sea water inlet and outlet, with removable closure means, at least two movable units for prospection and work on the sea bottom, each of the movable units being capable of communication with the master chamber through the watertight chamber of said coupling and transfer assembly and forming the bottom of the watertight chamber for said transfer, assembly wherein each of said movable units comprise an internally hollow cylinder-like body closed at the lower end and having a removable closure at the upper end, provided with work and inspection portholes with work iron hands in the form of arms projecting from outside and controllable from inside said movable unit, as well as propelling means also controllable from inside said movable unit by a pedal system, each of said movable units being connected by an umbilical cord with the master chamber and comprising a detachable ballast, the iron hand arms and the umbilical cord being rapidly detachable in case of fast emergency ascent.

4,164,196

PRESSURE GAUGE OR PRESSURE INDICATOR HAVING AXIALLY-OPERATING INTERNAL MEMBERS WITH VISUAL INDICATION

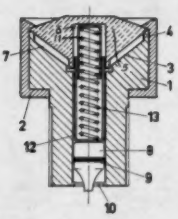
Fabio Stradella, and Cinzia Stradella, both of Piazza S. Giovanni Bono, 39/12, Recco, Genoa, Italy

Filed Nov. 2, 1977, Ser. No. 847,700

Claims priority, application Italy, Mar. 25, 1977, 12527 A/77; Jun. 13, 1977, 12637 A/77

Int. Cl.[2] G01L *7/16*

U.S. Cl. 116—272 **9 Claims**



1. A pressure indicator comprising a hollow main body, said main body defining a lower neck portion having a circular channel centrally defined therein and means operable for pressure-tight attachment of said indicator to a vessel, and an upper portion, an upper rim portion of said upper portion defining a seat;

a circular transparent member having an upper surface and a convex conical lower surface with a blind hole centrally opening on said lower surface so as to define a closed axial chamber in said transparent member, said chamber registering with said neck portion channel, at least a portion of said lower conical surface being seated on said main body seat;

an outer casing disposed about the upper portion of said main body and operable to retain said transparent member in seated, pressure-tight relationship with said main body; and

pressure indicating means disposed in said channel and said chamber, said pressure indicating means comprising an upper cup-shaped plunger, the closed end of which is disposed in said transparent member chamber, an opposed lower cup-shaped plunger telescopically mounted over said upper plunger and slidably disposed in said main body channel, the outer surface of said lower plunger being visually distinctive from that of said upper plunger, and spring means disposed between said plungers and opposing pressure forces communicated to said lower plunger.

4,164,197

LIQUID LEVEL INDICATING DEVICE

Thomas E. Nelson, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 16, 1977, Ser. No. 852,137

Int. Cl.[2] G01F *23/02*

U.S. Cl. 116—227 **14 Claims**

1. In combination with a dishwashing machine of the type having a door movable between an open and closed position;

a liquid dispenser tank mounted to said door, the dispenser tank including an opening formed in a filler spout extending through the inside of said door allowing refilling of said dispenser tank with liquid dispensed therefrom;

a liquid level indicator device providing a visual indication of the level of liquid in said dispenser tank whenever said level is at or above a predetermined level;

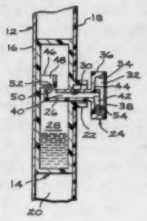
said indicator device comprising an indicator knob having a stem portion extending vertically into said dispenser tank with said door in said open position and disposed in said tank with said door in said open position and disposed in said fill opening providing a closure for said dispenser tank fill opening;

a viewing chamber formed by a recess within said indicator knob;

a sight window covering said viewing chamber in said indicator knob;

feed means for causing a predetermined quantity of liquid to flow from said dispenser tank into said viewing chamber upon closing of said door only when the level of liquid in said dispenser tank is at or above said predetermined level;

and means retaining a portion of said liquid in said viewing chamber upon opening of said door, whereby the presence of the liquid in said viewing chamber provides a visual



indication that the level of said liquid in said tank is above said predetermined level, wherein said feed means includes at least one feed passage extending within said stem portion and further includes an opening at an end portion of said stem in communication with said feed passage, whereinn said feed means further comprises a feed reservoir located in said dispenser tank to capture a quantity of liquid as said dispenser tank is repositioned and the liquid redistributes itself upon opening of said door, whenever said liquid level in said tank is above said predetermined level and further including means causing flow of said captured quantity of liquid into said opening in said end of said stem portion.

4,164,198

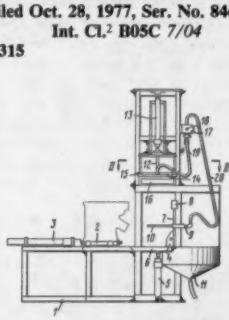
INSTALLATION FOR APPLYING A COAT TO THE ENTIRE INNER SURFACE OF A SECTIONALIZED HOLLOW ITEM

Evgeny I. Sheinin, Moscow; Nelli S. Belostotskaya, Reutovo, and Lev N. Yakovlev, Zheleznodorozhny, all of U.S.S.R., assignors to Gosudarstvenny Nauchno-Issle-Dovatelsky Institut Stroitelnoi Keramiki Niistroikeramika, U.S.S.R.

Filed Oct. 28, 1977, Ser. No. 846,565

Int. Cl.[2] B05C *7/04*

U.S. Cl. 118—315 **2 Claims**



1. Apparatus for applying a coating on inner surfaces of a cavity in an article of manufacture comprising, a carriage movable to a spray station and retractable therefrom selectively, means for moving said carriage to said station and retracting it therefrom, said carriage comprising means for mounting and releasably holding an article of manufacture

having a cavity open on a top end of the cavity and closed at the bottom thereof and a lateral opening into said cavity intermediate the open top of the cavity and closed bottom thereof, a tiltable device at said spray station comprising means for receiving said carriage with said article thereon and releasably holding said carriage in a tilted position, means for selectively tilting said tiltable device to a tilted position for tilting said article for draining excess coating material therefrom through said lateral opening, spray mechanism comprising a first spray device insertable into said cavity of said article through said lateral opening for spraying upwardly a coating material in said cavity and allowing coating material to drain to the bottom of the cavity, a second spray device in said spray mechanism insertable into said cavity through said top opening and spraying coating material along upper peripheral interior edges of said cavity and allowing coating material to drain to said closed bottom, said spray mechanism including a closure device movable into position overlying said top opening and closing said cavity during spraying of said coating material, means for automatically moving and actuating said first and second spray device and said closure in timed relationship, and receptacle means disposed for receiving excess coating material drained from the bottom and interior of said cavity through said lateral opening upon cessation of spraying in said cavity and said article is tilted to drain said excess coating material.

4,164,199

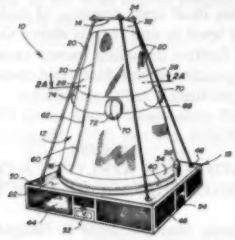
BENTHIC AQUATIC BIOTAL MONITOR

Willis E. Pequegnat, College Station, Tex., assignor to TerEco Corporation, College Station, Tex.

Filed Aug. 19, 1977, Ser. No. 826,052

Int. Cl.[2] A01K *61/00, 69/04*

U.S. Cl. 119—2 **17 Claims**



1. A benthic monitoring device for monitoring in situ samples of benthos in a body of water comprising:

a base portion including means for retaining benthic samples and having a horizontal top wall, a horizontal water permeable bottom wall and water permeable vertical side walls,

a water permeable mesh attached to and extending above said base portion to form a conical-shaped enclosure decreasing in cross-sectional area from one end to the other end, the larger end thereof being secured to said base portion and opening thereinto, the smaller end thereof being closed;

means attached to said base portion for supporting said conical-shaped enclosure above said base portion;

means for attaching said larger end of said conical-shaped enclosure to said base portion;

said conical-shaped enclosure including means for retaining benthic samples; and

said conical-shaped enclosure and said base portion having apertures therethrough with dimensions for retaining benthic samples while permitting the free exchange of ambient water between the outside of said conical-shaped enclosure and the inside of said conical-shaped enclosure to monitor the impact of changing aquatic environments on the benthic sample.

4,164,200

FEEDING DEVICE

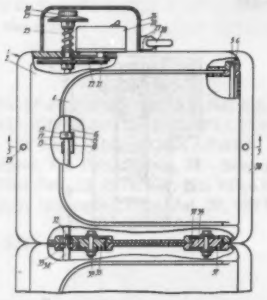
Kenneth H. Gambling, Rosanna, Australia, assignor to Set 'N' Forget Products Pty. Ltd., Australia

Filed Sep. 23, 1977, Ser. No. 836,079

Claims priority, application Australia, Sep. 24, 1976, PC7498; Jul. 6, 1977, PP0725

Int. Cl.[2] A01K *5/02*

U.S. Cl. 119—51.12 **10 Claims**



1. An animal feeder driving module including a food container, a housing for said food container, a lid hingedly attached to said food container housing, biasing means associated with said food container housing which urges said lid toward an open position, latch means on said lid, means cooperating with said latch means to normally maintain said lid in a closed position, a timing device mounted to said housing and turning a shaft extending through said housing, a trip collar located on said shaft and adapted to release said cooperating means to allow said lid to open, a free end of said shaft extending outward from said housing and including longitudinal coupling means for coupling said shaft longitudinally with a shaft of a similar animal feeder slave module, only said master module including said timing device.

4,164,201

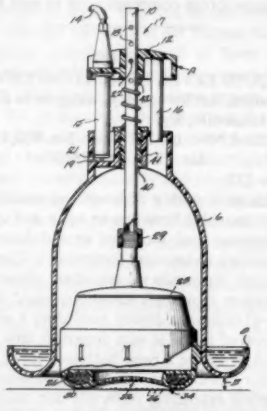
GROUND-SUPPORTED POULTRY DRINKING FOUNTAIN

Robert A. Vanderhye, Springfield, Va., assignor to Interfarm Corporation, McLean, Va.

Filed Oct. 17, 1977, Ser. No. 843,055

Int. Cl.[2] A01K *39/02, 7/02*

U.S. Cl. 119—81 **7 Claims**



7. A poultry drinking fountain comprising:

a generally bell-shaped member with a generally annular trough portion at the lower end thereof, and a hollow interior;

a ground-engaging support member adapted to have sufficient mass to support said bell-shaped member in an upright position so that poultry may drink out of said trough portion without tip-over, said support member disposed within the hollow interior of said bell-shaped member;

a valve member for supplying water from a source to said trough portion, said valve member movable between open and closed positions;

a valve support member for said valve for mounting said valve member;

connection means extending from said support member through said bell-shaped member to said valve support member for rigidly attaching said support member to said valve support member and including a single rod concentric with said support member and said bell-shaped member and said connecting means further including adjustment means for providing adjustment of the vertical spacing of said valve support member, and thus said generally annular trough, from the bottom of said support member;

means associated with said bell-shaped member for operatively engaging said valve member to move it from one position to another;

spring means for suspending said bell-shaped member from said valve support member independent of said connection means so that said annular trough will reciprocate vertically under the influence of said spring means with varying amounts of water disposed in said trough, causing said valve member to open to allow flow of water into said trough when the amount of water in said trough is below a predetermined level; and

said valve member being supported by said valve support member radially displaced from said rod, and a guide rod being provided parallel to said rod and said valve member radially spaced from said rod opposite said valve member; said valve member being rotatable with respect to said bell-shaped member upon lifting of said valve member against the bias of said spring means to a position whereat said valve member and said guide member clear interfering surfaces on said bell-shaped member, to allow ready access to and replacement of said valve member.

4,164,202

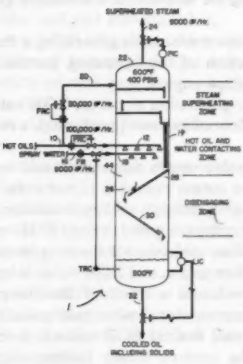
STEAM GENERATION

William Lockett, Jr., Basking Ridge, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 3, 1978, Ser. No. 893,064

Int. Cl.[2] F22B *1/16*

U.S. Cl. 122—31 R **13 Claims**



1. A process for controlling the rate of production of steam, which comprises: contacting a spray of liquid water drops with a spray of hot substantially non-volatile liquid drops in a contacting zone to produce steam by direct heat exchange of said hot liquid and said water, said water drops having a mean average diameter of about one half the size of the mean average diameter of said hot liquid drops.

4,164,203

FUEL PUMP INJECTOR

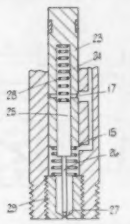
Eric J. Cavanagh, Surbiton, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 19, 1977, Ser. No. 760,582

Claims priority, application United Kingdom, Jan. 20, 1976, 2105/76

Int. Cl.[2] F02M *51/06*

U.S. Cl. 123—32 JV **6 Claims**



1. A fuel pump injector for mounting on an internal combustion engine so as to deliver fuel to a combustion space of the engine, the injector comprising in combination a housing, a bore defined in the housing, a plunger slidable within the bore, an outlet at one end of the bore, a valve for controlling fuel flow through said outlet, a fuel supply port opening into the bore at a position so that it is covered by the plunger during movement thereof towards said one end of the bore and an electromagnetic device for urging the plunger towards said one end of the bore whereby when said port is covered fuel is discharged through said outlet, said injector including a return spring for said plunger, said outlet comprised of an insert which is retained in said bore at said one end thereof, said insert defining a valve seat, said valve cooperating with said seat, said valve comprising an extension which is mounted on a cylindrical port slidable within a bore formed in said plunger, said bore being a blind bore and housing a spring action to urge said extension into contact with said seat, wherein said blind bore communicates with a further port formed in the wall of the bore mounting the plunger, said port and further port communicating with a fuel supply passage in the housing.

4,164,204

SIMPLIFIED METHOD AND APPARATUS FOR ASSURING PERIODIC CONTROL OF THE TIMING OF AN INTERNAL COMBUSTION ENGINE

Serge Guipaud, Castelnaudary, France, assignor to Societe Anonyme pour L'Equipement Electrique des Vehicules S.E.V. MARCHAL, Issy les Moulineaux, France

Filed Aug. 13, 1976, Ser. No. 714,138

Claims priority, application France, Aug. 18, 1975, 75 25468

Int. Cl.[2] F02P *5/08, 3/02*

U.S. Cl. 123—117 R **14 Claims**

1. In a method of periodically controlling at least one function responsive to the speed of rotation of a shaft, which control must be exercised with angular phase displacement with respect to the instant at which a point turning with the shaft passes a stationary point, said phase displacement being a function of the speed of rotation of the shaft, said method comprising the steps of

generating a signal P the duration of q of which corresponds to the period during which a rotating sector having a constant angle ϕ passes said stationary point,

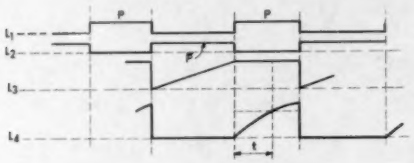
generating a complementary signal P throughout the period q corresponding to the absence of the signal q,

generating during one of the succeeding periods q and q a first voltage of the form $aq+b+ce^{-\gamma q}$ where a and b are constants c=o, and which varies as a function of q,

generating during a succeeding period q a second voltage which is a function of the time **5** from the beginning of said period q in which said signal P is generated, said second voltage being in the form $d+ge^{-\alpha t}$, where d and g are constants and α is a positive constant, said second voltage being independent of shaft speed, and

generating a control signal when the second of said voltages becomes equal to the first.

8. In a device for controlling the ignition advance of a reciprocating internal combustion motor with respect to the top dead point of the stroke of each piston, said device comprising



a stationary detector which cooperates with a rotating sector, associated with the motor shaft, which sector subtends an angle ϕ, and the speed of rotation of which shaft determines the ignition advance, said detector furnishing during the passage of said sector, a signal P having a duration q, and furnishing a signal P in the absence of the signal P, the improvement according to which said device comprises first circuit means for generating a first voltage of the form $aq+b+ce^{-\gamma q}$, in which a and b may be any constant, and c=o; second circuit means for generating a second voltage independent of motor speed and of the form $d+ge^{-\alpha t}$, in which formula d and g may be any constants, α is a positive constant, and t represents the time counted from the beginning of said signal P; and comparator means supplied by said first and second circuit means for generating a control signal when the second voltage becomes equal to the first voltage.

4,164,205

INTERNAL COMBUSTION ENGINE HAVING A DUAL INDUCTION TYPE INTAKE SYSTEM

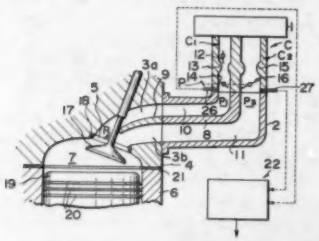
Koji Asanomi; Yasunori Takemoto, and Kazuo Kobayashi, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 5, 1977, Ser. No. 857,515

Claims priority, application Japan, Dec. 10, 1976, 51/149282; Dec. 10, 1976, 51/149283

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 R **6 Claims**



1. Internal combustion engine comprising cylinder means, piston means disposed in said cylinder means for defining therein combustion chamber means of variable volume, intake port means provided in said cylinder means and opening to said combustion chamber means, first and second intake passage means connected with said intake port means, first and second throttle valve means respectively provided in said first and second intake passage means, means for actuating said first and second throttle valve means so that the second throttle valve means starts to open after the first throttle valve means has been substantially fully opened, means for increasing engine output on demand, means for sensing that the first throttle valve means is in the vicinity of a substantially full open position and producing a transient signal, means for receiving said transient signal and actuating the engine output increasing means.

4,164,206

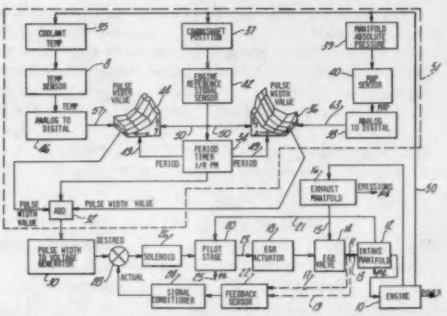
CLOSED LOOP PROGRAMMABLE EGR WITH COOLANT TEMPERATURE SENSITIVITY

Alvin D. Toelle, Fenton, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 19, 1978, Ser. No. 870,966

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **13 Claims**



1. An EGR system for an internal combustion engine comprising:

an electronic processor means for generating a desired EGR value as a function of the operating parameters of the internal combustion engine;

a sensor means for generating an actual EGR value by sensing the actual flow of exhaust gas through a recirculation loop;

a variable EGR valve means disposed in said recirculation loop, said valve means operable to vary the amount of exhaust gas passing through said recirculation loop;

control means for comparing said desired EGR value to said actual EGR value, said control means generating an increase signal when said actual EGR value is less than said desired EGR value as a result of the comparison and generating a decrease signal when said actual EGR value is greater than said desired EGR value as a result of said comparison, the control means further regulating the EGR valve in response to the increase and decrease signals to descrease EGR flow at a controllable rate in the event of a decrease signal and to increase EGR flow at a controllable rate in the event of an increase signal.

4,164,207

EXHAUST GAS RECIRCULATION MEANS

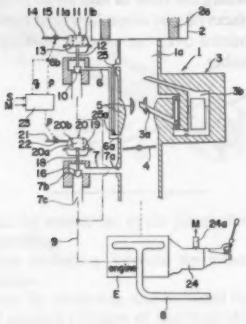
Kingo Okitsu; Koji Asanomi; Setsuo Harada, and Yasunori Takemoto, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 20, 1977, Ser. No. 808,355

Claims priority, application Japan, Jun. 19, 1976, 51/72329; Jun. 22, 1976, 51/75050

Int. Cl.[2] F02N *25/06*

U.S. Cl. 123—119 A 4 Claims



1. In an internal combustion engine having a carburetor including at least a venturi section, a fuel introduction system for introduction of fuel into air passing through said venturi section, and a throttle valve provided downstream of said venturi section, at least one combustion chamber to which the air-fuel mixture is supplied from said carburetor and in which the air-fuel mixture is burned, and exhaust pipe means for exhausting the gases of combustion from said combustion chamber, exhaust gas recirculation means comprising:

a take-off line from said exhaust pipe for taking off of a portion of said exhaust gas flowing in said exhaust pipe means;

a first recirculation line into which exhaust gas is supplied by said take-off line having a delivery end connected to a portion of said carburetor which is intermediate said venturi section and said throttle valve;

a second recirculation line into which exhaust gas is supplied by said take-off line and having a delivery end connected to a portion of said carburetor which is downstream of said throttle valve;

a first recirculation line closure means in said first recirculation line;

a second recirculation line closure means in said second recirculation line;

means for generating a first signal indicative of a vehicle transmission set to operate in a high speed range;

control means connected to said means for generating said first signal for receiving as an input said signal and for causing said first recirculation line closure means to close said first recirculation line upon receipt of said signal for interrupting the supply of exhaust gases in the first recirculation line; and

a supplementary air duct having an inlet end communicating with a portion of said carburetor which is upstream of said venturi section and an outlet end communicating with the interior of said first recirculation line.

4,164,208

EXHAUST GAS RECIRCULATION MEANS

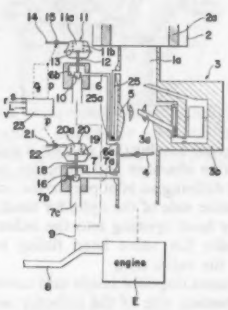
Kingo Okitsu; Koji Asanomi; Setsuo Harada, and Yasunori Takemoto, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 20, 1977, Ser. No. 808,354

Claims priority, application Japan, Jun. 19, 1976, 51-72328; Jun. 22, 1976, 51-75050

Int. Cl.[2] F02M *25/06*

U.S. Cl. 123—119 A 4 Claims



1. In an internal combustion engine having a carburetor including at least a venturi section, a fuel introduction system for introduction of fuel into air passing through said venturi section, and a throttle valve provided downstream of said venturi section, at least one combustion chamber to which the air-fuel mixture is supplied from said carburetor and in which the air-fuel mixture is burned, and exhaust pipe means for exhausting the gases of combustion from said combustion chamber, exhaust gas recirculation means comprising:

a take-off line from said exhaust pipe for taking off of a portion of said exhaust gas flowing in said exhaust pipe means;

a first recirculation line into which exhaust gas is supplied by said take-off line having a delivery end connected to a portion of said carburetor which is intermediate said venturi section and said throttle valve;

a second recirculation line into which exhaust gas is supplied by said take-off line and having a delivery end connected to a portion of said carburetor which is downstream of said throttle valve;

a first recirculation line closure means in said first recirculation line;

a second recirculation line closure means in said second recirculation line;

control means connected to the respective closure means and for receiving as an input at least one signal from among a first signal indicating that the vehicle speed is above a certain value, a second signal indicating that the engine load is above a certain value, a third signal indicating that the engine speed is above a certain value, and for causing said first recirculation line closure means to close said first recirculation line upon receipt of any one of said signals; and

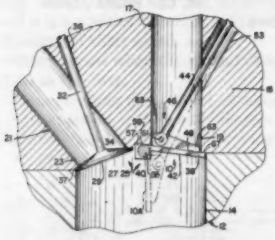
a supplementary air duct having an inlet end communicating with a portion of said carburetor which is upstream of said venturi section and an outlet end communicating with the interior of said first recirculation line.

4,164,209

INTERNAL COMBUSTION ENGINE CYLINDER VALVE ASSEMBLY

William V. Grants, 1244 Sunnyside Dr., Berkeley, Ill. 60163

Filed Jun. 8, 1977, Ser. No. 804,672
Int. Cl.[2] F01L *3/10*
U.S. Cl. 123—188 AP **10 Claims**



1. In an internal combustion engine, a cylinder head including a combustion chamber and induction passage terminating at a valve seat defining an inlet port to the combustion chamber in the combustion side of the cylinder head, a stem guide bore in the cylinder head opening into the induction passage,

a substantially flat valve head fitting over and engaging sealingly the valve seat;

mounting means disposed inside said combustion chamber in the combustion side of the cylinder head for connecting swingably said valve head to the cylinder block between a closed position in sealing engagement with the valve seat in a plane substantially perpendicular to the axis of the combustion chamber and a downwardly depending open position substantially parallel to the axis of the combustion chamber substantially out of alignment with said plane within said combustion chamber; and

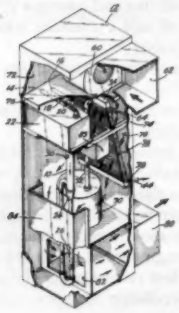
a valve stem reciprocatively journaled in said stem guide bore with one end of the valve stem extending from the cylinder head and its other end connected to said valve head for moving generally extensively reciprocatively within said stem guide bore toward and away from the combustion chamber.

4,164,210

PULSE COMBUSTION SYSTEM FOR HEATING OF AIR

George T. Hollowell, Mayfields Heights, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Aug. 30, 1977, Ser. No. 828,996
Int. Cl.[2] F24H *3/08*
U.S. Cl. 126—110 R **7 Claims**



1. In an air-heating pulse combustion furnace system comprising a pulse combustion chamber, means for feeding combustion air and combustible gas into said chamber to form a combustible mixture, an exhaust expansion chamber connected to receive hot exhaust gases from the outlet of said combustion chamber, a tail pipe connected to said combustion chamber and supplying hot exhaust gases from said combustion chamber to said expansion chamber, a flue gas outlet, an exhaust pipe line connecting said expansion chamber to said flue gas outlet gas, means for igniting said combustible mixture to produce pulse combustion in said chamber, and means for directing a flow of air to be heated over the exterior surfaces of said combustion chamber to heat said air:

the improvement comprising a secondary heat exchanger connected in said exhaust pipe line between said expansion chamber and said flue gas outlet so as to be heated by said exhaust gases flowing therein; and

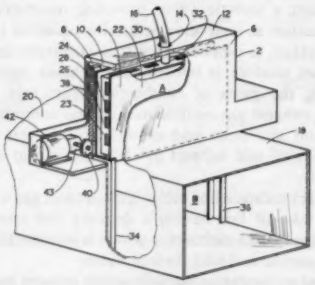
means for directing the flow of said air to be heated over the exterior surfaces of said secondary heat exchanger prior to said flow thereof over the exterior surfaces of said combustion chamber.

4,164,211

DAMPER ASSEMBLY

James H. Onnen, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 3, 1977, Ser. No. 838,821
Int. Cl.[2] F23L *13/06*
U.S. Cl. 126—285 A **5 Claims**



1. A damper assembly comprising:

a casing having a flow-through inlet and a flow-through outlet;

a movable damper blade disposed within said casing, said damper blade including a pair of parallel spaced plates spaced apart by a spacing member extending around the periphery of said plates and defining a cavity for receiving a fluid therein, said spacing member being spaced inwardly from the outer edges of said plates defining a peripheral channel along the outer edge of said damper plate;

a plurality of openings in said blade in flow communication with said cavity;

means to add a fluid to said damper blade cavity;

said spacing member having an opening therein in communication with said means to add a fluid to said cavity; and,

means to move said damper blade within said casing from an open to a closed position.

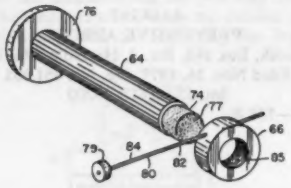
4,164,212
DEVICES FOR MENSTRUAL CYCLE PHASE DETERMINATION

Samuel R. Schuster, Wellesley, Mass., assignor to Ovutime, Inc., Brookline, Mass.

Division of Ser. No. 629,700, Nov. 7, 1975, Pat. No. 4,013,066, which is a continuation-in-part of Ser. No. 472,611, May 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 300,187, Oct. 24, 1972, abandoned. This application Mar. 18, 1977, Ser. No. 779,150

Int. Cl.[2] A61B *10/00*; **G01N** *33/16*

U.S. Cl. 128—759 **1 Claim**



1. Apparatus for menstrual cycle phase determination, said apparatus comprising:

(a) rod means including forward tip means and rearward handle means;

(b) ring means for receiving said forward tip means and bias means for causing rotation of said ring means with respect to said tip means;

(c) said rod means being operative for insertion into the vaginal cavity in order to cause said forward tip means to contact the uterus and to retrieve a mucus specimen;

(d) said forward tip means being characterized by a first cylindrical bearing surface;

(e) said ring means being characterized by a second cylindrical bearing surface;

(f) said forward tip means and said ring means being operative to mate with said mucus specimen between said first cylindrical bearing surface and said second cylindrical bearing surface;

(g) said bias means being operative to exert force between said forward tip means and said ring means when said first cylindrical bearing surface and said second cylindrical bearing surface are mated;

(h) and indicia means for indicating the degree of such force as a function of the physical character of said specimen;

(i) said forward tip means and said ring means being readily separable and readily matable;

(j) said bias means being an adjustable eccentric weight.

4,164,213
APPARATUS FOR EXAMINING BODIES THROUGH SCANNING BY MEANS OF ULTRASOUND

Georg Höelzler, Moehrendorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

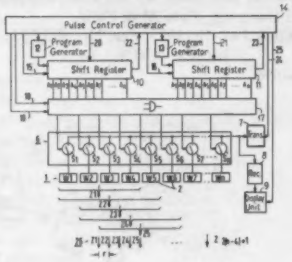
Filed May 24, 1977, Ser. No. 799,970

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628492

Int. Cl.[2] A61B *10/00*

U.S. Cl. 128—660 **10 Claims**

1. Apparatus for examining bodies through scanning by means of ultrasound, comprising an ultrasonic applicator with at least one row of adjacent ultrasonic transducer elements, and an actuating mechanism for group-actuation of the transducer elements, characterized in that the actuating mechanism for actuating the transducer elements of the ultrasonic applicator comprises means for actuating different symmetric configurations of transducer elements having different types of symmetry axes in a predetermined sequence during a complete scanning cycle, the different symmetric configurations of simultaneously energized transducer elements comprising first configurations each with a first type of symmetry axis where the symmetry axis is positioned between two adjacent transducer elements, and comprising second configurations of simultaneously energized transducer elements with a second type of symmetry axis where the symmetry axis is positioned at the center of a transducer element.



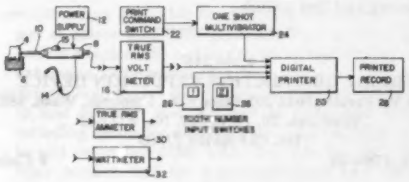
4,164,214
METHOD AND APPARATUS FOR MEASURING THE SENSITIVITY OF TEETH

Marvin M. Stark, Los Altos Hills; Jack B. Rosenfeld, San Francisco; Roger B. Pelzner, San Mateo, and Kenneth B. Soelberg, Menlo Park, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 25, 1977, Ser. No. 818,508

Int. Cl.[2] A61B *5/05*

U.S. Cl. 128—741 **11 Claims**



1. Apparatus for measuring the sensitivity of teeth in oral tissue, comprising:

(a) an electrode probe adapted for electronically contacting a tooth;

(b) a power supply connected to the electrode probe for applying electrical energy to said probe;

(c) an electrical lead connected to the power supply and adapted for making electrical contact with negligible contact resistance with oral tissue around the tooth being measured;

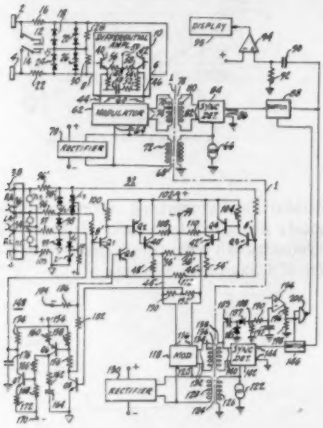
(d) means within the probe for varying the rate of electrical energy passing through the tooth from the probe; and

(e) means connected to the varying means for measuring the rate of effective electrical energy delivered to the tooth by the probe.

4,164,215
ELECTRODE SWITCHING MEANS FOR USE IN A DEFIBRILLATOR

Dana C. Finlayson, Natick; Ronald D. Gatzke, and Robert L. Stettiner, both of Lexington, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 10, 1977, Ser. No. 805,552
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—696 8 Claims



1. Apparatus for use in a defibrillator comprising the combination of

an output for coupling to a monitor,

a first pair of inputs adapted for connection to a pair of paddle electrodes,

means including a first switch for coupling the signals appearing between said first pair of inputs to said output, said switch being normally open,

a second pair of inputs adapted for connection to a pair of ECG electrodes,

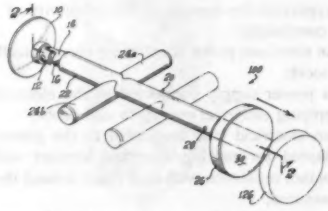
means including a second switch for coupling signals appearing between said second pair of inputs to said output, said switch being normally closed, and

means responsive to a given change in the impedance at said second pair of inputs for opening said second switch and closing said first switch.

4,164,216
THROAT OBSTRUCTION EXPULSION DEVICE

Orville W. Person, 7612 202 Place SW., Edmonds, Wash. 98020

Filed Jan. 26, 1978, Ser. No. 872,642
Int. Cl.[2] A61H 31/00
U.S. Cl. 128—28 8 Claims



1. A device for expelling an object lodged in the larynx of a person through the compression of the upper diaphragm, comprising:

anchor means adapted to be secured to a planar surface; an elongated track member;

hinge means affixed at either end to said anchor means and said track member, respectively, and allowing for rotational freedom therebetween in at least one plane; a slide reciprocable along said track member;

handgrip means affixed to said slide for manually imparting reciprocal motion thereto;

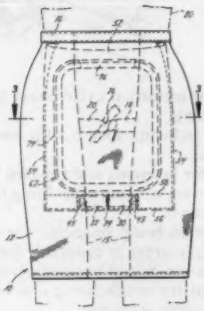
an impact pad affixed at the end said slide remote from said hinge means; and

retention means for preventing the disengagement of said track member from said slide.

4,164,217
PREVENTIVE APRON

Rudy J. Schrock, Box 245, Rte. 2, Hartville, Mo. 65667

Filed Nov. 16, 1977, Ser. No. 851,851
Int. Cl.[2] A61B 19/00
U.S. Cl. 128—138 R 11 Claims



1. A protective device for control of sexual conduct of a person comprising:

(a) a flexible front main apron section of a length extending from above the persons genital area to beneath the persons genital area and extending in front of the persons genital area;

(b) a shielding member associated with the main section, the shielding member extending from a position above the genital area to a position beneath the genital area;

(c) means for securing the main section to wrap around the thighs of the users lower body between the waist and the middle of the thighs.

4,164,218
PERSONAL ESCAPE BREATHING APPARATUS

Frank E. Martin, Chester, Md., assignor to Midori Anzen Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1977, Ser. No. 859,224
Int. Cl.[2] A62B 7/00
U.S. Cl. 128—142.7 5 Claims

1. A breathing apparatus comprising;

an elongated, flexible, gas-impermeable exhalation bag for receiving and storing exhaled gas from a user;

a substantially cylindrical carbon dioxide absorption canister for removing carbon dioxide from said exhaled gas within said exhalation bag and providing a breathable gas, said canister having two relatively large opposing open ends one of which is directly connected to a side of said exhalation bag, the longitudinal axis of said canister being substantially perpendicular to the length of said exhalation bag;

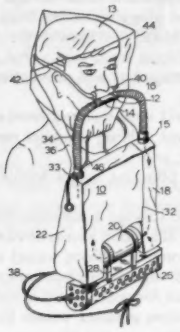
a chemical oxygen generator connected to said exhalation bag for supplying oxygen into said exhalation bag, said oxygen generator being supported from and thermally insulated from said carbon dioxide absorption canister and

being in a substantially parallel and side-by-side relationship with respect to said canister;

a flexible, gas-impermeable inhalation bag for receiving and storing the breathable gas from said carbon dioxide absorption canister, said inhalation bag being larger in volume than said exhalation bag and directly connected to the other open end of said canister to support said canister between said inhalation and exhalation bags, said inhalation bag being directly attached to said side of said exhalation bag;

a transparent, flexible and gas-impermeable hood for defining a substantially closed space around the head of a user;

means, including a mouthpiece connected to said exhalation bag and said inhalation bag, for receiving the exhaled gas from the user and introducing the exhaled gas into said exhalation bag, and for supplying the breathable gas



stored within said inhalation bag to the user, said mouthpiece being open to said closed space defined by said hood;

nose blocking means attached to said hood for blocking the gas inflow into the nostrils of the user, said nose blocking means comprising a frame supported on the inner surface of said hood so that said frame is positioned in front of the user's nostrils when said hood is worn, and a film of a soft, flexible and gas-impermeable material stretched over said frame to extend over an area effective for covering and contacting the user's nostrils; and

support means, made of a flexible, gas-impermeable sheet material and having a hole through which the user's head can be passed, for integrally supporting said exhalation and inhalation bags and the breathing apparatus from the user's neck on the user's chest, said support means forming a part of said exhalation and inhalation bags.

4,164,219

VENTILATOR

Forrest M. Bird, Palm Springs, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 8, 1976, Ser. No. 730,722

Int. Cl.[2] **A61M** *16/00*

U.S. Cl. 128—145.8 **5 Claims**

1. A ventilator providing an inhalation phase and an exhalation phase in its operative cycle comprising a gas inlet line (83) adapted to be coupled to a source of gas under pressure;

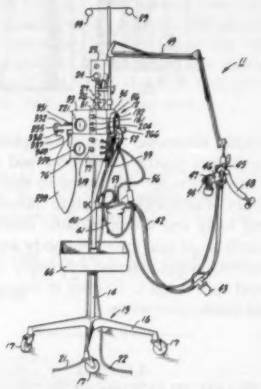
a patient adapter (48) having a through opening terminating at an outlet opening adapted to communicate with a patient;

a sequencing switch assembly (94) comprising control valve means (96,99) having an inlet opening (97) coupled to said gas inlet line (83), an outlet opening (98), and a spindle (99) movable between open and closed positions for controlling the flow of gas between said openings (97,98), and control means including means for defining a control chamber including a diaphragm (101) coupled to said spindle (99) for moving said spindle (99) from said closed to said open position in response to gas pressure in said control chamber below a first predetermined pressure and for moving said spindle (99) from said open to said closed position upon gas pressure in said control chamber above a second predetermined pressure which is higher than said first predetermined pressure;

means for connecting the outlet opening (98) of said control valve means with said through opening of said patient adapter (48) to provide a main flow of gas thereto;

means for connecting said control chamber with said through opening of said patient adapter (48) to communicate gas pressures in said through opening with said control chamber so that said spindle (99) will be moved to said open position in response to gas pressure in said through opening below said first predetermined pressure and will be moved to said closed position in response to gas pressure in said through opening above said second predetermined pressure;

exhalation valve means (47) coupled to the through opening of said patient adapter (48), having an operating chamber, and having a portion (377) movable from a normal open position permitting gas flow to the atmosphere from the patient adapter to a closed position preventing gas flow to the atmosphere from the patient adapter when the gas pressure in said operating chamber is above a third predetermined pressure;



conduit means (52,53,54) for directing a secondary flow of gas at above said third predetermined pressure to said patient adapter (48) and to the operating chamber of said exhalation valve means (47);

apneustic hold means (91) having an inlet line (90) coupled to said gas inlet line (83) and an outlet line (238) and including means for supplying gas from said inlet line (90) to said outlet line (238) while said spindle (99) is in said open position and for a predetermined time after said spindle (99) is moved from said open position to said closed position;

mode selector means (161) including first and second inlets and an outlet, means connecting the outlet opening (98) of said control valve means to said first inlet of said mode selector means, means connecting the outlet line (238) of said apneustic hold means to the second inlet of said mode selector means, means connecting the outlet of said mode selector means to said conduit means, said mode selector means including a portion (162,163,164) manually movable between a first position for connecting the first inlet of aid mode selector means to its outlet, and a second position connecting its second inlet to its outlet whereby, when said portion (162,163,164) is positioned in its first position, gas is directed to said patient adapter (48) and said exhalation valve means (47) from the outlet opening (98) of said control valve means via said conduit means

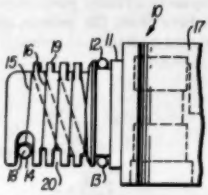
(52,53,54) only when said spindle (99) is in said open position; and when said portion (162,163,164) is positioned in its second position gas is directed to said patient adapter (48) and said exhalation valve means (47) from said gas inlet line (83) via said apneustic hold means (91) and said conduit means (52,53,54) when said spindle (99) is in its open position and for a predetermined time after said spindle (99) moves to its closed position.

4,164,220

ELECTRONIC TEMPERATURE SENSORS

Christopher G. Brickell, and Derek A. Hodson, both of Auckland, New Zealand, assignors to Fisher & Paykel Limited, New Zealand

Filed Jul. 22, 1976, Ser. No. 707,481
Claims priority, application New Zealand, Jul. 23, 1975, 178193; Sep. 2, 1975, 178557
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—185 2 Claims



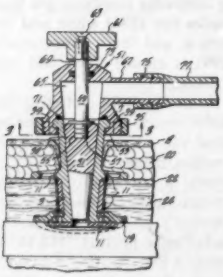
1. A mounted electronic device comprising a mounting body, a temperature sensor carried by said mounting body, insulated connecting wires connected to said sensor, parts of which wires are of considerable length mounted externally of said mounting body and a thin metallic coating over at least some outer surfaces of said mounting body and over said parts of said connecting wires exposed externally of said mounting body with said thin metallic coating in intimate contact with said insulated connective wires.

4,164,221

ATRAUMATIC BLOOD ACCESS DEVICE VALVE

Donald J. Bentley, Newport Beach, and Donald A. Raible, Orange, both of Calif., assignors to Bentley Laboratories, Inc., Irvine, Calif.

Filed Jul. 28, 1977, Ser. No. 813,527
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 R 6 Claims



1. An atraumatic method of valving for a blood passageway of a blood access device, said blood passageway connecting a blood vessel with a body to the body exterior, said blood passageway having a plugging means restrained in a sealing relationship therein preventing flow through said blood passageway, said method comprising:

removing said plugging means restraint;

connecting a valve chamber means to the portion of said blood access device blood passageway at said body exterior, said valve chamber means including a blood outlet and a portion adapted to receive at least a portion of said plugging means;

connecting a reciprocable stem member to said plugging means, said removable stem member passing through said valve chamber means;

pulling said reciprocable stem member and thereby pulling at least a portion of said connected plugging means from said blood passageway into said valve chamber means, and allowing for the passing of blood through said blood passageway and said valve chamber blood outlet;

pushing said reciprocable stem member and thereby pushing said connected plugging means from said valve chamber and into said blood passageway thereby allowing for the expelling of blood from said valve chamber means and said blood passageway and preventing further blood flow therethrough;

disconnecting said stem member from said plugging means;

disconnecting said valving chamber means from said blood access device; and

restraining said plugging means within said blood passageway.

3. An atraumatic valving mechanism for operation within a blood passageway of a blood access device, said blood passageway adapted to connect a blood vessel within a body to the body exterior, said valving mechanism comprising:

a plugging means for sealing said blood passageway;

a reciprocable stem member means for connection to said plugging means;

a valve chamber means adapted to be secured to the portion of said blood access device blood passageway at said body exterior, said valve chamber including a blood outlet and an aperture through which said reciprocable stem member means for connection to said plugging means may be passed and;

a retaining ring for securing said valve chamber means to said blood access device, wherein said valve chamber means is further defined as including a plurality of slits, at the portion of said valve chamber means adapted to be secured to the portion of said blood access device, in order to facilitate connection and disconnection of said valve chamber means.

4,164,222

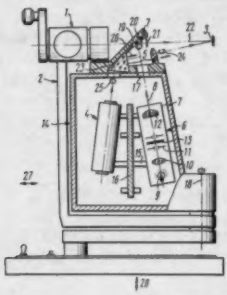
LASER OPHTHALMOLOGICAL UNIT

Alexandr M. Prokhorov; Alexandr L. Vinogradov, both of Moscow; Jury K. Danileiko, Troitsk Moskovskoi oblasti Podolskogo raiona; Alexandr A. Manenkov, Moscow; Mikhail M. Krasnov, Moscow, and Leonid P. Naumidi, Moscow, all of U.S.S.R., assignors to Fizichesky Institut Imeni P.N. Lebedeva Akademii Nauk SSSU of USSR and Vsesojuzny Nauchno-Issledovatelsky Institut Glaznykh Boleznei, both of Moscow, U.S.S.R.

Filed Jul. 6, 1977, Ser. No. 813,278
Claims priority, application U.S.S.R., Jul. 12, 1976, 2373635
Int. Cl.[2] A61B *17/36*
U.S. Cl. 128—303.1 5 Claims

1. A laser ophthalmological unit comprising a laser producing a powerful light emission in order to exert the action upon the patient's eye; an optical system for supplying and focusing the laser emission to a specified point of the patient's eye; an optical system for illumination of the surgery field, comprising a slit source provided with a light-transmitting element with a marker for guiding the laser beam to a specified point of said patient's eye; an optical deflecting element for directing the slit source beam to the patient's eye; a casing wherein said lasing source and said slit illumination source are housed and rigidly secured together, the optical elements of the system for supply-

ing the powerful laser beam and said deflecting optical element mounted outside said casing are rigidly secured to said casing but can be moved for alignment so that optical axes of both systems can coincide in a specified point where the patient's eye is located; a microscope having an axis of rotation for observation of the surgery field; a hinge securing said casing



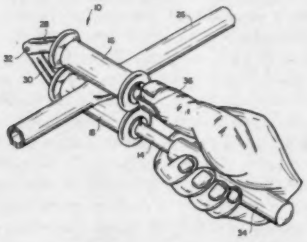
for rotation around the axis of rotation of the microscope, which lies in the focal plane of both said systems and the microscope, and as a result irrespective of the angle between the optical axes of said microscope and said slit illumination source, the marker is always in the focal plance of said microscope.

4,164,223

SURGICAL INSTRUMENT

Hamza I. Munib, 131 Liberty St., Petaluma, Calif. 94952

Filed Aug. 4, 1977, Ser. No. 821,795
Int. Cl.[2] A61B *17/28*
U.S. Cl. 128—321 **1 Claim**



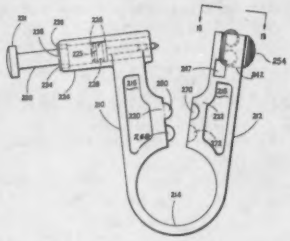
1. A surgical instrument for use with resilient tubing such as chest tubing, catheters, common duct T-tubing and IV tubing, comprising the combination of a pair of parallel elongated shafts each having first and second ends, said first ends of said shafts being pivotally mounted together for pivotal movement about an axis, a pair of cylindrical rollers mounted for rotation on each shaft, respectively and lying in a plane perpendicular to said pivot axis, said rollers being oriented in parallel, spaced-apart relationship for movement into and out of engagement with opposite sides of the tubing, an elongate first handle mounted on and extending coaxially from a second end of said shafts and the rollers in a direction remote from the hinge, and a thumb rest mounted on and extending coaxially from a second end of the other shaft and roller, said thumb rest being disposed in spaced relationship with the handle whereby the user's hand can simultaneously grasp the handle and thumb rest for moving the rollers at right angles to and against the tubing while also moving the rollers along the length of the tubing.

4,164,224

DISPOSABLE EARLOBE PIERCING DEVICE AND METHOD FOR USING THE SAME

John A. Hastings, 31 Main St., Bass River, Mass. 02664

Continuation-in-part of Ser. No. 553,671, Feb. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 457,551, Apr. 13, 1974, abandoned. This application Jan. 14, 1977, Ser. No. 759,384
Int. Cl.[2] A61B *17/00*
U.S. Cl. 128—330 **60 Claims**



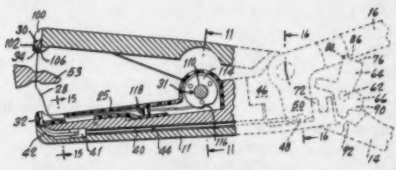
57. In an earlobe piercing apparatus the arrangement comprising a barrel having a bore, an ear stud mounted within the barrel, the ear stud having a head portion mounted within the bore and having a shaft portion substantially contained within said barrel and extending forward from the head portion through the bore and out of the barrel and terminating in a point extending axially outward from the transparent barrel a distance of substantially 1/16th of an inch.

4,164,225

SURGICAL SUTURING INSTRUMENT

Alfred A. Johnson, New York, and Arthur Zimmet, Huntington, both of N.Y., assignors to Johnson & Lorenz, Inc., New York, N.Y.

Filed Dec. 28, 1977, Ser. No. 865,221
Int. Cl.[2] A01B *17/04*
U.S. Cl. 128—334 R **12 Claims**



1. A surgical suturing instrument comprising
(a) a first jaw;
(b) a second jaw for cooperating with the first jaw to clamp tissue to be sutured, said second jaw having a handle;
(c) an actuator arm manipulable jointly with the handle;
(d) means for pivotally interconnecting said jaws and said arm for angular movement relative to each other about a common axis from which said jaws extend forwardly and said handle and said arm extend rearwardly;
(e) means, carried by said first jaw and operable by angular movement of said arm relative to said first jaw, for applying a suture to tissue clamped between the jaws; and
(f) latch means for selectively interlocking said first jaw with said arm and with said second jaw in succession during progressive angular movement of said arm in a closing direction toward said handle, such that movement of said arm in said direction initially moves said first jaw to a tissue-clamping, closed position relative to said second jaw and thereafter operates said suture-applying means while the jaws are interlocked;

wherein the improvement comprises:

(g) said latch means comprising a latch member pivotally mounted on said first jaw and including

(i) a first portion for engaging said arm when said first jaw is away from said closed position to interlock said arm and said first jaw and thereby to transmit, to said first jaw, angular motion of said arm in said closing direction, and

(ii) a second portion engageable by said second jaw for pivotally moving said latch member in a given direction to displace said first portion out of interlocking engagement with said arm as said first jaw arrives at said closed position.

4,164,226

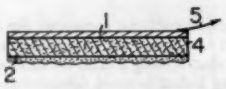
IONTOPHORETIC BURN-PROTECTION ELECTRODE STRUCTURE

Robert Tapper, c/o General Medical Co., 1935 Armacost Ave., Los Angeles, Calif. 90025

Division of Ser. No. 717,791, Aug. 25, 1976. This application Jun. 13, 1977, Ser. No. 806,393

Int. Cl.[2] A61N *1/20*

U.S. Cl. 128—419 R **14 Claims**



1. An electrode structure for applying an essentially unidirectional electric current through the skin of a living body, comprising:

(a) a first electrically conductive electrode having a porous material with a thickness in excess of three millimeters upon one side thereof adapted to be interposed between said electrode and said skin,

(b) a second electrically conductive electrode adapted to contact said skin at a location thereon spaced from said first electrode,

(c) a controlled source of unidirectional electric current having a positive pole and a negative pole, and

(d) means for connecting said first electrode to said negative pole and said second electrode to said positive pole, whereby iontophoretic burn is minimized.

4,164,227

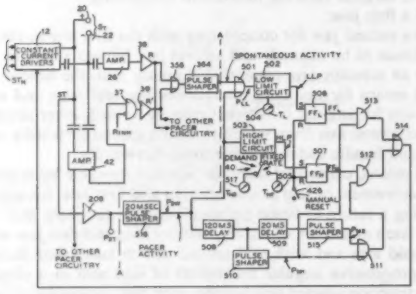
RATE FAILURE INDICATOR

Albert A. Auerbach, New York, N.Y., assignor to Medalert Corporation, New York, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,079

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 PT **15 Claims**



1. An improvement for automatically indicating a rate failure condition in a pacer for pacing monitoring, comprising monitoring means for monitoring the rate of spontaneous and pacer activity of said pacer, first limit means preset at a low level of combined spontaneous and pacer activity coupled to said monitoring means, second limit means preset at a high level of pacer activity coupled to said monitoring means, first switch means connected to said first limit means, second switch means connected to said second limit means, said first limit means responsive to said rate of combined spontaneous and pacer activity falling below said preset low level for placing said first switch means in a switched condition, said second limit means responsive to said rate of activity exceeding said preset high level of pacer activity for placing said second switch means in a switched condition, and indicating means coupled to said first and second switch means for converting said switched conditions to distinguishable marking pulse signals for later clinical electrocardiogram detection.

4,164,228

PAD FOR NURSING BRASSIERES

Georg Weber-Unger, Am Brand 2, 8201 Nussdorf/Inn, Fed. Rep. of Germany

Filed Oct. 28, 1977, Ser. No. 846,558

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 7635406[U]

Int. Cl.[2] A41C *3/00*

U.S. Cl. 128—461 **5 Claims**

1. An absorbing pad for nursing brassieres, said absorbing pad being formed of absorbent material, said absorbing pad including a cap-shaped portion proportioned to fit the contour of the breast and being so positioned in said nursing brassier that it is adjacent to the breast of the wearer, said absorbing pad further including an extension affixed to the lower periphery of said cap-shaped portion and extending downwardly therefrom, characterized therein that said extension forms an absorbing apron being positioned adjacent to the body of the wearer, said absorbing apron being formed of such material so that it generally conforms to the contour of the body of the wearer and is capable of absorbing discharged fluids, whereby the absorbing area of said nursing brassier is increased by the presence of said absorbing apron.

4,164,229

PORTABLE CIGARETTE MAKING MACHINE

James S. Hurt, P.O. Box 131, Hanover, Va. 23069

Filed Mar. 18, 1977, Ser. No. 779,027

Int. Cl.[2] A24C *5/08, 5/44*

U.S. Cl. 131—55 **7 Claims**

5. A cigarette making machine comprising:

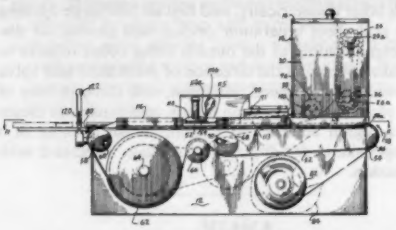
(a) a conveyor belt;

(b) first means for feeding cigarette paper onto said conveyor belt;

(c) second means for feeding tobacco onto cigarette paper on said conveyor belt;

(d) third means for forming a cigarette rod from the tobacco and the cigarette paper, said means including a rotary compactor in position to engage the tobacco on said cigarette paper and to compact it into a substantially cylindrical rod; and

(e) fourth means for connecting said rotary compactor to said conveyor belt to compact the tobacco rod in synchro-



nization with the travel of the cigarette paper through the machine.

4,164,230

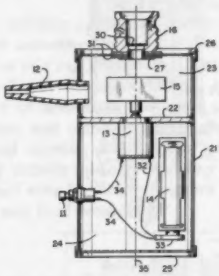
AUTOMATIC SMOKING DEVICE

Walter Pearlman, 4 Eliot St., Somerville, Mass. 02143

Filed Jul. 13, 1977, Ser. No. 815,223

Int. Cl.[2] A24F *1/10, 47/00*

U.S. Cl. 131—171 R **8 Claims**



1. Automatic smoking apparatus comprising,

means defining a generally circularly cylindrical container divided into an upper fan chamber for accommodating a fan and an electrical chamber for accommodating an electrical drive motor,

bowl means for accommodating smoking material supported above said fan chamber with means defining a passage for communicating between said bowl means and said fan chamber,

stem means for carrying smoke ejected from said fan chamber having an opening communicating with said fan chamber,

an electric motor in said electrical chamber having a spindle,

a flat fan blade having its length perpendicular to the container axis of said cylindrical container being greater than its height along said container axis,

means for connecting said fan blade to the electric motor spindle,

and means for selectively providing electrical energy to said electrical motor to rotate said fan blade,

the axis of rotation of said fan blade, the axis of said spindle and the axis of said bowl means coinciding,

the stem axis of said stem means coincident with a diameter of said container embraced by said blade so that rotation of said blade produces a decrease in pressure in said fan chamber along said container axis for drawing smoke from said bowl means into said fan chamber and an increase in pressure adjacent the opening of said stem means for ejecting smoke from said fan chamber through said stem means.

4,164,231

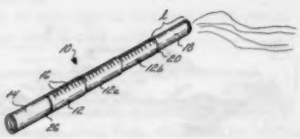
APPARATUS FOR CONTROLLING THE LENGTH OF CIGARETTE TO BE SMOKED

Jonas Greenwald, 1 Prospect Park SW., Brooklyn, N.Y. 11215

Filed Jul. 14, 1977, Ser. No. 815,563

Int. Cl.[2] A24F *13/02*

U.S. Cl. 131—192 **6 Claims**



1. Apparatus for controlling the length of a cigarette to be smoked comprising

a generally cylindrical sheath comprising movable concentric telescoped members adapted to closely fit aroud a standard cigarette, said sheath having a fixed end and a telescoped end,

a mouthpiece attached to the fixed end of said sheath,

receptable means fixedly formed within said sheath and mouthpiece for receiving and holding said cigarette within said sheath,

and means for adjustably fixing the length of said sheath by moving the telescoped end to expose a controlled length of cigarette to be smoked.

4,164,232

CONSTANT COIN FLOW RATE COIN PROCESSING APPARATUS

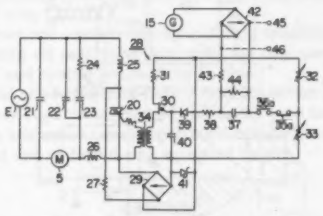
Shiro Nakai; Kazuto Asami, and Hirokuni Matono, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Japan

Filed Aug. 12, 1977, Ser. No. 824,302

Claims priority, application Japan, Aug. 18, 1976, 51/10539[U]

Int. Cl.[2] G07D *9/04*

U.S. Cl. 133—8 R **5 Claims**



1. A constant coin flow rate coin processing apparatus comprising:

a rotary disc for feeding coins by centrifugal force;

a coin passage receiving coins fed from said rotary disc for aligning and conveying said coins;

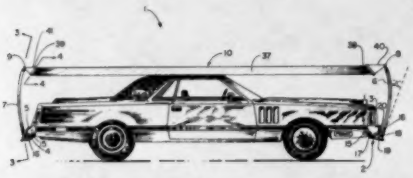
a coin counting means connected to said coin passage for counting said coins conveyed by said coin passage; and

a speed control means connected to said rotary disc and said coin counting means for controlling the speed of said rotary disc according to the number of coins counted by said coin counting means in a predetermined period for changing the speed of said rotary disc for keeping the rate of coins fed from said rotary disc constant.

4,164,233
VEHICLE COVERING APPARATUS

James R. McAndrew, 3960 Government St., Baton Rouge, La. 70806

Filed Mar. 7, 1978, Ser. No. 884,281
Int. Cl.[2] A45F *1/14*
U.S. Cl. 135—5 A 5 Claims

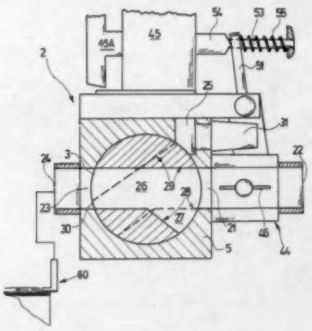


1. A portable device for covering vehicles comprising:
(a) attaching clamps connected to front and rear bumpers of said vehicle,
(b) rods attached to each of said clamps and extending above said vehicle, and
(c) an opaque covering assembly attached at each end of said rods above said vehicle, said covering assembly comprising an opaque, waterproof covering attached at each end to extension bars, said extension bars comprising a center brace having a central hollow cavity extending through said brace, blocking rings attached at each end of said brace and extending into said central hollow cavity, end braces fitting into each end of said central hollow cavity and extendable out therefrom, each end brace having stop means contactable to said blocking rings to prevent said end braces from being pulled from said central hollow cavity.

4,164,234
METERING DEVICE

Rudolf Liepert, Augsburg, Fed. Rep. of Germany, assignor to Georg Spiess GmbH, Gersthofen, Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,225
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1976, 2643381
Int. Cl.[2] B65H *3/08*
U.S. Cl. 137—51 13 Claims

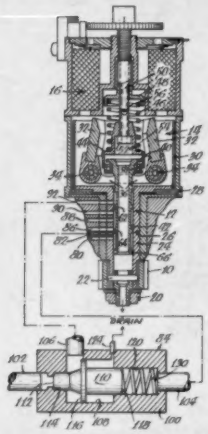


1. An arrangement for metering a blast of air delivered to a driven machine, particularly a sheet separation device of a sheet feeder, comprising: a pressure source; a control element connected via an air intake opening to said pressure source; said control element having a first air discharge opening connected to the driven machine and a second air discharge opening leading into the open; said control element actuated as a function of machine speed; said first air discharge opening being controlled or disconnected during upward movement or stoppage of said sheet feeder by said control element; said control element comprising a rotary valve plug with a through-bore, said through-bore being aligned coaxially with said air intake opening and with said first air discharge opening facing each other diametrically, said first air discharge opening leading to said sheet separation device; said second air discharge opening leading to the outside being offset relative to said air intake opening in the direction of rotation of said valve plug corresponding to speed reduction, said through-bore of said valve plug having expansion means, said expansion means enlarging a region adjacent to said air intake opening in a direction opposite to the direction of rotation associated with speed reduction.

4,164,235
GOVERNOR FOR CONTROLLING HYDRAULIC TRANSMISSION

Victor N. Benson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 23, 1977, Ser. No. 799,551
Int. Cl.[2] G05D *13/30*
U.S. Cl. 137—52 11 Claims



1. A governor for controlling a hydraulic transmission comprising:
a housing;
a flyweight assembly rotatable within said housing;
an axially movable hydraulic transmission control valve within said housing, said valve being connected to said flyweight assembly for axial movement in one direction within said housing in response to rotation of said flyweight assembly within the housing;
a spring axially biasing said valve for axial movement in the other direction within said housing;
means for sensing an underspeed condition of the governor; and
hydraulic means responsive to said sensing means and the sensing of an underspeed condition in excess of a predetermined amount, for axially shifting said valve in said other direction.

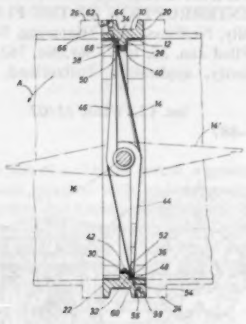
4,164,236
VALVE ASSEMBLY WITH SEAT CLEANING SYSTEM

Marler W. Owen, 5503 Valkeith, Houston, Tex. 77096, and Ray E. Morris, 803 Holton, Bellaire, Tex. 77401

Filed Jul. 21, 1977, Ser. No. 817,549
Int. Cl.[2] F16K *1/226*
U.S. Cl. 137—240 8 Claims

1. A valve assembly comprising:
a valve body having a flowway therethrough and including

oppositely axially directed end surfaces adapted to be engaged by respective mounting fittings;
means defining a seating surface extending generally radially into said flowway from said valve body;
a disc-like valve element having a sealing area engageable with said seating surface and mounted in said flowway for movement of said sealing area toward and away from said seating surface;



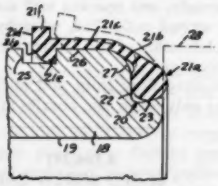
and means defining a fluid passageway through said valve body and including an arcuate recess extending axially into one of said end surfaces and positioned to be covered by one of said mounting fittings, inlet means opening externally of said valve body and communicating with said recess, and outlet means communicating with said recess and opening internally of said valve body and generally radially into said flowway and positioned such that a fluid may be directed against said seating surface through said fluid passageway.

4,164,237

FUEL PRESSURE REGULATOR ASSEMBLY

Arnold Amey, Otisville, Mich., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Filed Feb. 24, 1978, Ser. No. 881,063
Int. Cl.[2] F16K *31/12*
U.S. Cl. 137—510 **5 Claims**



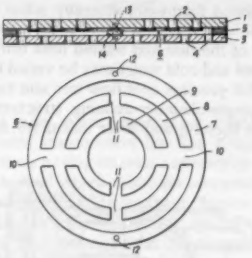
1. A fuel pressure regulator assembly comprising,
a housing,
a diaphragm separating said housing into a first and second chamber,
said housing having a radial inlet extending to said first chamber,
a connector mounted in said housing and extending axially into said first chamber,
said connector having an axial outlet,
a sealing member of resilient material,
an annular groove adjacent its inner end,
said groove facing radially outwardly,
said sealing member having an O-ring portion positioned in said groove, such that a portion of said sealing ring projects axially beyond said connector,
said sealing member including an integral tubular portion extending from said ring position,
said connector having another annular groove spaced from the end of said connector,
said sealing member having a radially inwardly extending rib extending from said tubular portion into said last mentioned groove of said connector,
said diaphragm having a valve member adapted to engage said O-ring portion,
and spring means in said second chamber urging said valve member against said O-ring portion.

4,164,238

CLOSING PLATE FOR A RING VALVE

Albert F. Riedel, Schongau, Fed. Rep. of Germany, assignor to Hoerbiger & Co., Schongau, Fed. Rep. of Germany

Continuation of Ser. No. 738,269, Nov. 2, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,101
Claims priority, application Austria, Nov. 3, 1975, 8357/75
Int. Cl.[2] F16K *15/14*
U.S. Cl. 137—512.15 **9 Claims**



1. A closing plate for a ring valve mountable on a valve seat with through-flow passages, comprising:
at least one concentric plate ring and at least one radially spaced concentric sectioned plate ring for controlling the through-flow passages;
radially extending arms interconnecting said at least one concentric ring and said at least one radially spaced concentric sectioned plate ring;
one of said at least one concentric plate ring being continuous and said at least one sectioned ring being separated by radial slits;
said at least one continuous ring including spaced points for mounting on said valve seat with the ring portions between said spaced points being flexible;
said radial arms extending from a flexible portion of said at least one continuous ring and passing between said spaced points, said radial arms supporting the ring sections of said at least one sectioned ring separated by slits.

4,164,239

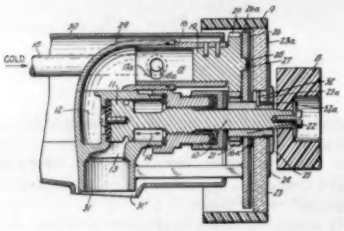
HOT AND COLD WATER RATIO AND VOLUME MANUAL DEVICE

Dominic V. DeCesare, 223 Center St., Elizabeth, N.J. 07202

Filed Dec. 10, 1976, Ser. No. 749,231
Int. Cl.[2] F16K *11/22*
U.S. Cl. 137—553 **1 Claim**

1. A manual water faucet temperature control device consisting essentially of a single-chamber-defining structure substantially forming common first-flow space and valve-seating space and having a first inlet orifice and a second inlet orifice in communication with said first flow space, having an outlet orifice, and having a valve-seating port; a single unitary valve structure sealably seated within said valve-seating port, the single unitary valve structure having a first plate portion sealably seated in justaposition to the first inlet orifice and adapted to move to and from alternate blocking position and non-

blocking position relative to said first inlet orifice as the single unitary valve structure is rotated either clockwise or counter-clockwise within said valve-seating port, and said single unitary valve structure further having a second plate portion sealably seated in justaposition to the second inlet orifice and adapted to move to and from alternate blocking position and non-blocking position relative to said second inlet orifice as the single unitary valve structure is rotated either clockwise or counter-clockwise within said valve-seating port, the first plate portion and the second plate portion each being mounted in positions adapted for the first and second plate portions to slide over the respective first and second inlet orifices to and from respective said blocking positions and respective said non-blocking positions and each of the first and second plate portions being of predetermined size dimensions and positioned relative to one-another, adapted such that while one is not blocking the inlet orifice associated therewith the other one thereof may range from substantially complete blocking to substantially complete absence of blocking of the inlet orifice associated therewith, and further adapted such that while the other is not blocking the inlet orifice associated therewith the said one thereof may range from substantially complete blocking to substantially complete absence of blocking of the inlet orifice associated therewith, whereby when a hot water conduit is connected to one and a cold water conduit is connected to the other of the first and second inlet orifices relative proportions of hot and cold water may be varied from full pressure hot-flow to full pressure cold flow into said valve-seating space within the single-chamber-defining structure and out-of the outlet orifice thereof; and lever means for moving the single



unitary valve structure in alternate opposite directions within the valve-seating port; said single unitary valve being located within said valve-seating space within the single-chamber-defining structure, said single-chamber-defining structure being substantially cylindrical in shape with the valve-seating port at one end thereof and with the outlet orifice at an opposite end thereof, and having said first and second inlet orifices positioned within cylindrically-shaped walls thereof, and said single unitary valve structure and the first and second plate portions thereof each having a flow-blocking surface convexly shaped and seated within cylindrically-concave walls of the single-chamber-defining structure, said single unitary valve structure being rotatable; and a guage means for providing a visually discernable scale indicative of from time-to-time positioning of the single unitary valve structure, including at least one of a scale and a pointer mounted on said single-chamber-defining structure and said lever means, and a remaining one of the scale and the pointer mounted on a remaining other of said single-chamber-defining structure, with the pointer and scale being in juxtaposition to one-another and indicative of degree to which said first and second inlet orifices respectively are blocked by the single unitary valve structure; said lever means comprising an annular handle; and a volume control means for regulating volume of flow from said said first flow space, the volume control means including a shaft extending and movable axially and sealably through a central opening of said annular handle, and said shaft having a volume-control valve mounted on a distal end thereof, said single-chamber-defining structure forming a common second flow space and volume-control seating space, said volume-control valve being seated sealably within said volume-control seating space positioned to be moved alternately axially in opposite directions to open and close flow and regulate rate of flow through said orifice responsive to movement axially of said shaft in intermittently opposite directions.

4,164,240

DEVICE FOR LOW-LOSS VARIATION OF FLOW FROM A POSITIVE DISPLACEMENT PUMP BY PERIODIC INTERRUPTION OF THE FLOW

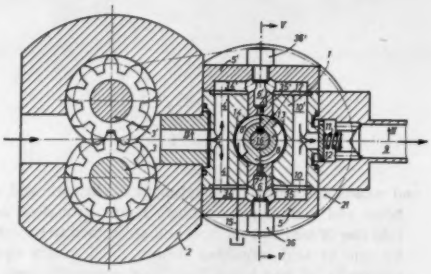
Ivan J. Cyphelly, Neuhaus, 8128 Hinteregg, Switzerland

Filed Jan. 26, 1977, Ser. No. 762,570

Claims priority, application Switzerland, Jan. 27, 1976, 994/76

Int. Cl.[2] F16K *11/02*

U.S. Cl. 137—887 **6 Claims**



1. A valve arrangement for use in a system having an inlet line from a positive displacement pump, a first outlet line directed to a load and a second outlet line directed to a zero-pressure pump reservoir, comprising:

a fixed valve housing having a bore therein;

two nozzles passing through said valve housing and extending into opposite sides of said bore, the openings of said nozzles being directed into said bore diametrically toward one another;

means for directing flow from said inlet line to said two nozzles;

rotary shutter means coaxially positioned within said bore for periodically and alternately, as said rotary shutter means continuously rotates, closing both of said nozzles, simultaneously, and opening said nozzles to allow flow into said second outlet line, whereby the necessity for a sealing relationship of said shutter with said valve housing is eliminated; and

means permitting flow from said inlet line into said first outlet line only when said nozzles are closed.

4,164,241

BLEED SCREW CAP

Takaaki Kubo, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Nov. 18, 1977, Ser. No. 852,968

Claims priority, application Japan, Nov. 27, 1976, 51-158681[U]; Nov. 30, 1976, 51-160213[U]

Int. Cl.[2] F16K *27/12*

U.S. Cl. 137—377 **5 Claims**

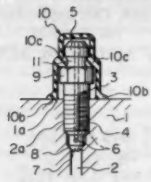
1. A hydraulic bleeding assembly comprising:

a hydraulic component having therein an air bleed passage;

a bleed screw mounted on and extending from said hydraulic component, said bleed screw including an inner screw threaded portion threaded into said air bleed passage, a polygonal tool engaging portion extending outwardly and spaced from an outer surface of said hydraulic component and having a size larger than the diameter of said screw threaded portion, an outer head portion, and a neck portion between said tool engaging portion and said head

portion, said neck portion having a diameter smaller than said head portion and said tool engaging portion; and

a cap of resilient material such as rubber completely covering all portions of said bleed screw which extend outwardly from said hydraulic component, said cap including a generally cup-shaped closed outer end portion covering



said head portion of said bleed screw, a generally cylindrical leg portion integral with and depending from said outer end portion and loosely covering said tool engaging portion, an inwardly extending annular projection tightly engaging said neck portion of said bleed screw, and said leg portion having an open inner end which resiliently engages said outer surface of said hydraulic component.

4,164,242

VALVE FOR A PRESSURE TANK

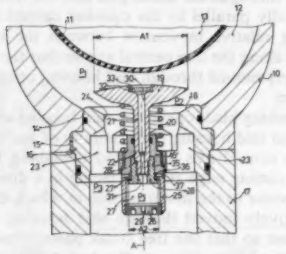
Hartmut Sandau, Möglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,858

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715424

Int. Cl.[2] F16L *55/04*

U.S. Cl. 138—30 **5 Claims**



1. A pressure device, comprising a hollow container having an outlet for discharging fluid therefrom, said outlet being provided with a valve seat; a valve member slidably mounted in said container above said valve seat for respective movement between an open position to thereby permit fluid to discharge through said outlet and a closed position to thereby prevent fluid from discharging out of the container, said valve member being provided with a portion facing towards and corresponding to said valve seat and operative for fittingly engaging said valve seat when the valve member is in said closed position; resilient means for urging the valve member into said open position; a flexible partition in said container subdividing an interior thereof into a gas-containing compartment and into a liquid-containing compartment at said outlet, said partition being displaceable on expansion of gas in said gas compartment into an extended position immediately adjacent said outlet; and means connected to said valve member for preventing movement of the same into said closed position until the container is empty, and including a stationary barrel having one open end communicating with said liquid-containing compartment only when the container is substantially full and another open end for predetermined discharge of fluid from said barrel, said one open end becoming closed by said partition only in said extended position of the latter so as to prevent any communication between said barrel and said liquid-containing compartment, so that said valve member closes said outlet only when the fluid discharges from said barrel through said other open end.

4,164,243

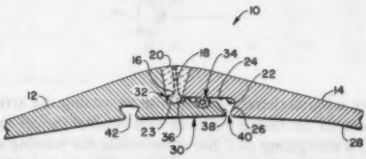
WELDED JOINT IN SEGMENTED SHEATH FOR COMPRESSED GAS INSULATED TRANSMISSION LINES

Alan H. Cookson, Southborough, and Philip C. Bolin, Northborough, both of Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 18, 1977, Ser. No. 779,124

Int. Cl.[2] F16L *9/02*

U.S. Cl. 138—162 **7 Claims**



1. A weld joint in an arcuate segmented sheath of a compressed gas insulated transmission line for joining first and second sheath sections having interior and exterior walls along confronting longitudinal edges, said joint comprising:

a first longitudinal margin adjacent said exterior wall of said first second having a face generally parallel with a radial line through a longitudinal axis at the center of curvature of said segmented sheath;

a longitudinal recess offset from said first margin along said interior wall, said recess including a circumferential base wall;

a second longitudinal margin adjacent said exterior wall of said second section having a face generally parallel with a radial line through a longitudinal axis at the center of curvature of said segmented sheath to abut to said first margin;

a tongue extending circumferentially from said second section and having one face to confront to said face wall;

sealing means comprising a tubular elastomeric sealing gasket longitudinally disposed between said recess and said tongue; and,

a longitudinal ridge adjacent said sealing gasket for preventing the flattening of said sealing gasket between said tongue and said recess.

4,164,244

APPARATUS FOR DOSING BULK GOODS

Siegfried Meier, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Oct. 5, 1977, Ser. No. 839,745

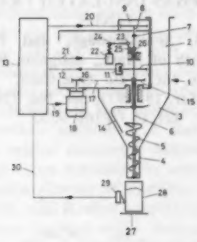
Claims priority, application Switzerland, Oct. 5, 1976, 12580/76

Int. Cl.[2] B65B *3/08*

U.S. Cl. 141—156 **4 Claims**

1. In an apparatus for cyclically dosing bulk goods for filling receptacles in a filling position into which they are sequentially advanced, including a dosing auger; an electric motor connected to the auger to rotate the same; braking means for braking the electric motor shortly prior to the termination of a dosing cycle; the improvement wherein the electric motor is a disc rotor motor and said braking means is an electric braking means; further comprising a blocking device having an actuated state in which it prevents rotation of said auger and an idle

state in which it permits rotation of said auger; control means for setting said blocking device in the actuated state after said auger has been brought at least approximately to a standstill by said electric braking means and maintaining said blocking device in the actuated state until the beginning of a successive dosing cycle; and a sensor means associated with the filling position and connected with an input of said control means for



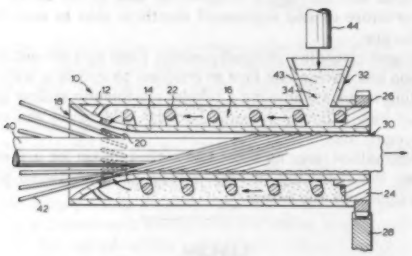
applying a signal thereto in response to sensing the arrival of a receptacle in the filling position; said control means including means for energizing said disc rotor motor for starting a dosing cycle in response to the receipt of said signal, means for energizing said electric braking means shortly before termination of the dosing cycle and means for setting said blocking device in said actuated state subsequent to the energization of said electric braking means.

4,164,245

POWDER PUSHING DEVICE FOR FILLING CABLE

Jorg-Hein Walling, St. Hubert, and Jean Bouffard, Lachine, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1978, Ser. No. 876,875
Int. Cl.[2] B65B *37/10*
U.S. Cl. 141—250 **10 Claims**



1. A device for filling the interstices of multi-stranded cable with powder, comprising:

a cylindrical housing;

a tube within the housing for receiving the multistranded cable, the tube being concentric with the housing and spaced inwardly therefrom to form an annular chamber between said housing and tube, the tube further being flared outwardly at the inlet end thereof, and having openings annularly disposed therein adjacent said inlet end, the chamber being closed at each end thereof and opening annularly into the tube via said slots;

powder feeding means opening into the housing; and

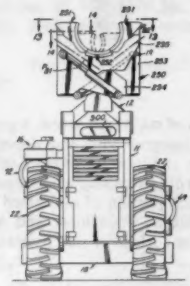
means intermediate the housing and tube to move powder from the powder feeding means through the chamber and into the tube through said openings, to the interstices of the multistranded cable.

4,164,246

TREE PROCESSING MACHINE

Donald D. Savage; Robert V. Chambers, and Maurice T. Mills, all of Marietta, Ga., assignors to B. J. Powell, Atlanta, Ga., a part interest

Division of Ser. No. 552,318, Feb. 24, 1975, Pat. No. 4,044,806, which is a continuation-in-part of Ser. No. 293,482, Sep. 29, 1972, Pat. No. 3,881,533. This application Aug. 29, 1977, Ser. No. 828,892
Int. Cl.[2] A01G *23/08*; B27L *1/00*
U.S. Cl. 144—2 Z **6 Claims**



6. A tree delimbing mechanism for removing branches from a tree trunk at the sockets joining the branches with the tree trunk where the tree trunk has a tree central axis comprising:

a housing defining an arcuate opening therethrough about an opening central axis adapted to receive the tree trunk therein;

traversing means for locating the tree trunk in the arcuate opening through said housing so that the tree central axis is generally parallel to the opening central axis and for effecting relative movement between the tree and the housing along the tree central axis so that the tree trunk is effectively moved through said housing opening in a first direction;

a first delimbing blade carried by said housing and fixed with respect to said housing both laterally of and axially of the opening central axis, said fixed delimbing blade a first arcuate cutting edge thereon facing in a direction generally opposite to the first direction in which the tree trunk is effectively moved through said housing opening and positioned so that the tree trunk passes closely adjacent said first cutting edge as the tree trunk is effectively moved through said housing opening, said first delimbing blade further defining a first abutting shoulder thereon spaced outboard of said first cutting edge with respect to the tree central axis and extending along the length of said first cutting edge so that said first cutting edge effectively passes along the tree trunk facing the oncoming branches to make an initial cut in each branch in alignment with said first cutting edge at a position adjacent the branch socket and so that said first abutting shoulder on said first cutting blade strikes the branch outboard of the initial cut made by said first cutting edge to cause the branch to first split down from the initial cut into the socket and then cause the socket to separate so that the branch is removed from the tree trunk;

a pair of second movable delimber blades movably mounted in said housing on opposite sides of said fixed blade for movement toward and away from said fixed blade in a plane generally perpendicular to the tree central axis and axially fixed with respect to the housing opening axis, each of said second movable blades defining a second arcuate cutting edge thereon facing in the direction generally opposite to the first direction in which the tree trunk is effectively moved through said housing opening and positioned so that the tree trunk passes closely adjacent

said second cutting edge as the tree trunk is effectively moved through said housing opening, each of said second movable delimbing blades further defining a second abuttment shoulder thereon spaced outboard of said second cutting edge with respect to the tree central axis and extending along the length of said second cutting edge so that said second cutting edge effectively passes along the tree trunk facing the oncoming branches to make an initial cut in each branch in alignment with said second cutting edge at a position adjacent the branch socket and so that said second abutting shoulder on each of said second cutting blades strikes the branch outboard of the initial cut made by said second cutting edge to cause the branch to first split down from the initial cut into the socket and then cause the socket to separate so that the branch is removed from the tree trunk; and,

positioning means for selectively moving said movable blades toward and away from each other to cause said cutting edges of said second movable blades to pass closely adjacent the tree trunk and for maintaining substantially constant force on said movable blades toward the tree trunk while allowing limited movement of said movable blades with respect to the tree central axis.

4,164,247

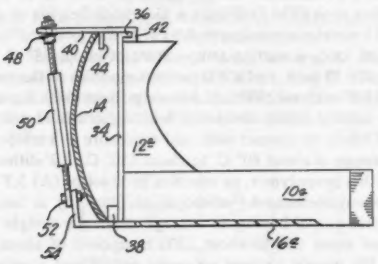
TREE AND STUMP SPLITTER

Robert H. Wolf, 408 S. Willow St., Flora, Ind. 46929

Division of Ser. No. 743,487, Nov. 19, 1976, Pat. No. 4,094,348. This application Jan. 26, 1978, Ser. No. 872,621

Int. Cl.[2] A01G *23/08*

U.S. Cl. 144—34 F **3 Claims**



1. A stump splitter attachment for a bulldozer having a bulldozer blade, said attachment comprising a vertical sharp edged stump splitting blade extending forwardly of said attachment, at least one horizontally extending generally triangular cut off blade secured to said splitting blade from a position near the forward end of said splitting blade and having a rear edge lying in a plane normal to said splitting blade, and means to secure said attachment to the bulldozer blade in which said means to secure said attachment to the bulldozer blade includes back plate means secured to said cut off blade and extending in a plane normal to said splitting blade and rear edge of said cut off blade, said back plate being provided with a forwardly extending flange, a top plate formed with a hook portion to receive said forwardly extending flange, said top plate being provided with a stop means to engage a top edge of the bulldozer blade, a turnbuckle and means on the rear edges of said cut off blade and on said top plate to operatively engage ends of said turnbuckle, whereby said attachment may be securely clamped to said bulldozer blade by operation of said turnbuckle.

4,164,248

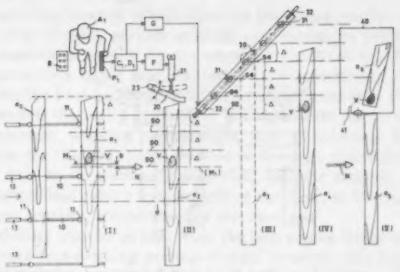
METHOD AND APPARATUS FOR CUTTING OFF DEFECTIVE PORTIONS OF LENGTHS OF TIMBER

Alpo Rysti, Frisansintie 22, 02240 Espoo 24, Finland

Filed Dec. 30, 1977, Ser. No. 866,391

Int. Cl.[2] B27B *1/00*

U.S. Cl. 144—312 **10 Claims**



1. In a method for removing, from lengths of timber, pieces thereof which have defects therein, the steps of continuously conveying the lengths of timber along a predetermined path with the lengths of timber arranged in succession along said path extending transversely thereof, determining an aligning distance for a given one of said lengths of timber which has a defect therein, as said given length of timber approaches a given location along said path, said aligning distance being defined by the distance between a cutting line extending across said given length of timber next to said defect and one of a series of second lines nearest to said cutting line on one side thereof and all extending parallel to each other in the direction of said path and situated at predetermined equal incremental distances from each other, transmitting to an adjustable pusher when said given length of timber reaches said given location, a first signal at a selected magnitude corresponding to said aligning distance, said adjustable pusher being situated in the path of movement of an end of said given length of timber at a second location located along said path subsequent to said given location for adjusting said pusher to push said given length of timber transversely of said path through said aligning distance, so that upon reaching said second location said given length of timber will be shifted transversely of said path to align said cutting line with said one of said second lines, and also transmitting a second signal to an incremental moving means situated at a third location along said path subsequent to said second location for actuating said incremental moving means in response to said second signal to move said given length of timber when it reaches said third location through a given number of incremental distances transversely of said path equal to the incremental distances between said second lines and sufficient to situate said cutting line in alignment with a predetermined one of said second lines with which a cutting means is aligned at a fourth location along said path subsequent to said third location, cutting said given length at said fourth location with said cutting means to separate the given length of timber into a pair of pieces only one of which will have said defect.

4,164,249

METHOD AND APPARATUS FOR MACHINING COMPONENTS FOR STAIRS

Robert D. Strub, 817 S. Capitol, Iowa City, Iowa 52240

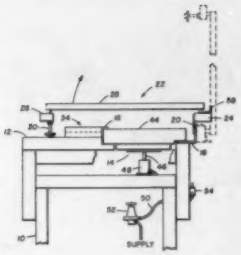
Filed Feb. 8, 1978, Ser. No. 876,146

Int. Cl.[2] B27C *5/10*

U.S. Cl. 144—326 R **7 Claims**

7. The method of machining grooves in stringers for stairs which grooves are adapted to receive the ends of treads and risers therein when said stairs are assembled, said method comprising: providing a jig having a plurality of parallel spaced-apart guide members corresponding to the number of

treads in the stairs; positioning said jig with said guide members over the surface of the stringer into which said grooves are to be machined; moving said guide members to a first position in which they are at the desired angle relative to said stringer; locking said guide members in position relative to said stringer; passing a tool along each of said guide members to form the grooves for said treads in said stringer; unlocking said



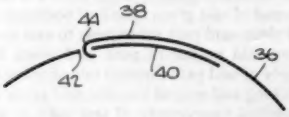
guide members so that they can be moved relative to said stringer; moving said guide members to a second position in which they are at right angles to their first position; locking said guide members in said second position relative to said stringers; passing said tool along each of said guide members to form the grooves for said risers in said stringer; and unlocking said guide members so as to allow said machined stringer to be removed from beneath said jig.

4,164,250

NAIL-DEFLECTING, INNER-TUBE ASSEMBLY FOR RUN-FLAT TIRES

Daniel Shichman, Trumbull, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 741,918
Int. Cl.[2] B60C *17/00*
U.S. Cl. 152—205 **14 Claims**



1. A pneumatic tire, comprising a substantially toroidal-shaped carcass having a pair of bead-reinforced sidewall regions, a crown region annularly bridging said sidewall regions, and nail-deflecting means disposed internally of said carcass between said sidewall regions for deflecting a nail that punctures said crown region, said nail-deflecting means including an annular, inflatable inner-tube capable of being inflated to a volume sufficient to engage with its exterior surface substantially the entire interior surface of said carcass and a puncture-proof, circumferentially expandible, but inextensible, pliable band disposed between said inner tube and said crown region, said band having overlapping opposite end portions and being expandible by movement of said end portions with respect to each other from a releasably constrained normal circumferential condition, wherein said band is annularly spaced from the interior of said crown region, to an expanded circumferential condition, wherein said band makes substantial circumferential contact with the interior of said crown region, said band having restraining means with a predetermined yield level for maintaining said band in said releasably constrained normal circumferential condition while said tire is puncture-free with at least a first predetermined pressure level being maintained in the space between the carcass and the exterior of said inner tube, said inner tube being circumferentially self-expandible upon puncture of the crown region by a nail with consequent loss of pressure in said space below the first predetermined pressure, the puncture-caused expansion of said tube against said band establishing a tensile stress in said band in excess of the predetermined yield level of said restraining means, causing the restraining means to yield and enable the end portions of said band to slidably move with respect to each other to place said band in said circumferential expanded condition, and wherein said restraining means comprise at least one slot formed in said band a predetermined distance from one of said end portions, said other end portion including at least one tab having a bent portion receivable in said one slot, the engagement of said tab in said slot defining the normal circumferential condition of said band, and wherein the bent portion of said tab is of arcuate U-shape with concave and convex surface portions, said slot having a sidewall bearing against the concave surface portion of said tab when said band is in said constrained normal circumferential condition.

4,164,251

POLYURETHANE TIRE AND WHEEL ASSEMBLY

Daniel A. Chung, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

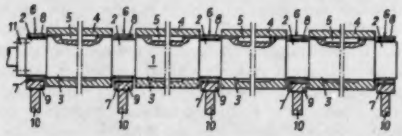
Continuation of Ser. No. 570,155, Apr. 21, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 851,246
Int. Cl.[2] B60C *1/00*; C08G *18/76*; C08K *5/36*
U.S. Cl. 152—323 **1 Claim**

1. In an industrial tire/wheel assembly comprised of a solid, resilient polyurethane ground contacting tire molded and adhered to a centered rigid core adapted to fit to an axle of an industrial vehicle the combination of improvements wherein (i) said polyurethane is characterized by having a slit tear strength according to ASTM D-1938 in the range of about 15 to abut 30 pounds, a compression set in the range of 25 to 35 percent according to ASTM D-395(B), a Goodrich flex life of at least about 15 minutes according to ASTM D-623 modified by using a 437 psi load, a starting temperature of about 38° C. and a stroke of 0.15 inch, and a 300 percent modulus in the range of about 1500 to about 2000; and (ii) said polyurethane is prepared by the method which comprises reacting as a fluid mixture in a mold cavity in contact with said rigid core at a temperature in the range of about 80° C. to about 150° C., 2,2′-dithiodianiline with a prepolymer, or reaction product of (A) 3,3′-dimethyldiphenylmethane-4,4′-diisocyanate, and (B) at least one polymeric polyol having an average molecular weight in the range of about 800 to about 3200 comprised of about 50 to about 100 weight percent polyester polyol and, correspondingly, about 50 to about zero weight percent polyether polyol, said polyols having a hydroxyl functionality of about 2, where said polyester polymeric polyols are selected from at least one of (1) the product of ϵ-caprolactone with diethylene glycol, (2) the condensation of low molecular weight saturated hydrocarbon diols containing 2 to 10 carbon atoms with an organic polycarboxylic acid selected from succinic acid, adipic acid and azelaic acid, and (3) polyethylene adipate and where said polyether polymeric polyols are selected from the type prepared by (1) polymerizing or copolymerizing alkylene oxides selected from ethylene oxide, propylene oxide and butylene oxide, (2) polymerizing or copolymerizing low molecular weight glycols selected from ethylene glycol, 1,3-propane diol and 1,4-butane diol, or (3) by the reaction of one or more of said alkylene oxides with said glycols and, optionally, with a small amount of trimethylol propane; where the ratio of isocyanate groups to polyol hydroxyl groups is in the range of about 1.7/1 to about 2.3/1 and the ratio of amino groups to excess isocyanate groups over hydroxyl groups is in the range of about 0.8/1 to about 1.1/1.

4,164,252
STRAND GUIDING ROLLER FOR A CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Dec. 5, 1977, Ser. No. 857,259
Claims priority, application Austria, Dec. 10, 1976, 9125/76
Int. Cl.[2] B22D *11/12;* **B65G** *13/00*
U.S. Cl. 164—448 **3 Claims**

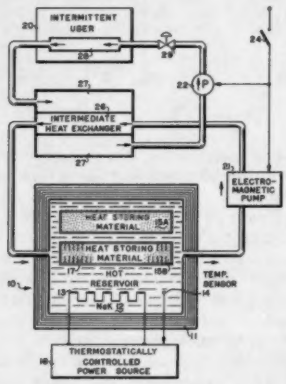


1. In a strand guiding roller to be used in a continuous casting plant for supporting, bending, straightening and deforming a continuously cast strand, in particular steel slab, wherein said strand guiding roller has a plurality of roller bodies and a plurality of bearings distributed over the length of said strand guiding roller, the improvement which is characterized in that a drivable shaft is provided, said plurality of roller bodies being designed as exchangeable wear sleeves and being arranged on said drivable shaft at a distance from each other, catch connections being provided to fasten said exchangeable wear sleeves on said drivable shaft so as to secure said exchangeable wear sleeves against rotation with respect to said shaft, and said bearings being provided intermediate said exchangeable wear sleeve to rotatably accommodate said drivable shaft therein and to support said shaft at a number of places along its longitudinal extension.

4,164,253
METHOD FOR REDUCING THERMAL DEGRADATION OF A HEAT EXCHANGE FLUID

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 575,414, May 7, 1975, abandoned. This application Jan. 3, 1977, Ser. No. 756,392
Int. Cl.[2] H05B *1/00;* **F28D** *15/00;* **F24H** *7/04*
U.S. Cl. 165—1 **4 Claims**



1. A method for reducing thermal degradation of a degradable thermal exchange fluid in a heat transfer system comprising the steps of

a. maintaining a heat source comprising a high temperature heat store at least at a temperature which is the maximum working temperature of an intermittent user, said maximum working temperature degrading the thermal exchange fluid at a significant rate,

b. providing a control means for permitting operation of said user during working periods of temperatures up to and including said maximum working temperature and during non-working periods permitting operation of the user at a lower idle temperature for a prolonged period, said lower idle temperature not degrading the thermal exchange fluid at a significant rate,

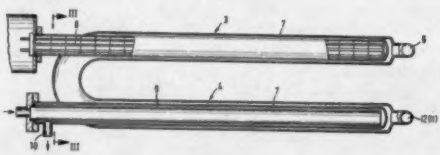
c. regulating transfer of heat from the heat source to the user during working periods to attain said maximum working temperature thereof by transferring heat from the heat source to a stable heat exchange fluid, transferring heat from the heat exchange fluid to a thermal exchange fluid which is thermally degradable at a significant rate at said maximum working temperature, and transferring heat from the thermal exchange fluid to the user, said transfer of heat to the heat exchange fluid and the thermal exchange fluid raising temperature of the fluids to the maximum working temperature of the user, and

d. reducing transfer of heat from the heat source to the user during non-working periods thereof to attain said lower idle temperature by limiting the transfer of heat from said heat source to said thermally degradable thermal exchange fluid by said thermally stable heat exchange fluid to a level whereby the thermally degradable thermal exchange fluid is maintained at said lower idle temperature during said non-working period to reduce degradation of the thermal exchange fluid to a not significant rate.

4,164,254
HEAT EXCHANGE DEVICE

Hans Hucke, Essigweg 6, CH-4133 Prätteln-Basel, Switzerland

Filed Jun. 3, 1977, Ser. No. 803,285
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1976, 7618150[U]
Int. Cl.[2] F25B *29/00*
U.S. Cl. 165—65 **7 Claims**



1. A heat exchange device for a heat transmission apparatus utilizing a heat carrier liquid, the heat exchange device comprising: a U-shaped tube provided with an inlet at one end and with an outlet at the other end thereof for the passage of the heat carrier liquid; a tubular casing extending into each arm of the U-shaped tube, said casing being closed at one end to prevent heat carrier liquid entering the casing and forming an annular flow passage between the casing and the arm of the tube; and a heat transfer means replaceably mounted within each casing for selective heating up or cooling off the heat carrier liquid flowing through the annular flow passage, wherein the heat transfer means is mounted from the U-side of the U-shaped tube in each tubular casing.

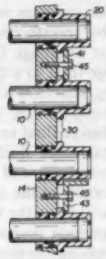
4,164,255
HEAT EXCHANGER

Raymond Binet, Hellemmes; Alain Chielens, Marcq en Baroeul, and Maurice Lebegue, Hellemmes, all of France, assignors to Fives-Cail Babcock, Paris, France

Filed Nov. 14, 1977, Ser. No. 851,219
Int. Cl.[2] F28F *9/04*
U.S. Cl. 165—82 **10 Claims**

1. In a heat exchanger which comprises an array of tubes having an outer diameter, a perforated end plate having an

outer face and defining a plurality of holes each having a diameter exceeding the outer diameter of the tubes, a support sleeve in each of the holes for holding an end of a respective one of the tubes in a respective one of the holes, an exterior surface of each support sleeve fitting the respective hole and an interior surface of each support sleeve being in contact with the respective tube, the exterior and interior surfaces extending along the hole and each defining a groove, and a toroidal gasket in each of the grooves whereby a fluid-tight joint is



formed between the respective hole and the support sleeve as well as the support sleeve and the respective tube: a clamping portion on each support sleeve, the clamping portion being affixed to the outer face of the perforated end plate and having an end projecting beyond the outer end plate face and the end of the respective tube held in the support sleeve, and an inwardly extending abutment at the projecting end of the clamping portion for limiting any movement of the tube beyond the abutment.

4,164,256

COOLING TOWER WITH FORCED VENTILATION AND NATURAL DRAFT

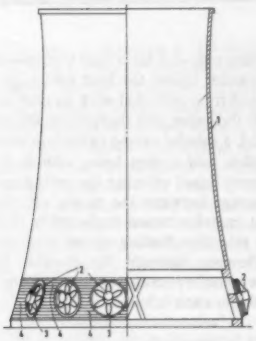
Fritz Kelp, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Aug. 12, 1977, Ser. No. 824,099

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1976, 2636807

Int. Cl.[2] F28F *9/24*; F28B *9/00*

U.S. Cl. 165—125 **3 Claims**



1. Cooling tower for cooling by concurrent cooling with both natural draft and blower draft, by cooling solely with natural draft or by cooling solely with blower draft,

(a) having an outer peripheral wall provided with blowers spaced about the periphery thereof at a lower region thereof,

(b) the blowers being formed with annular inlet openings for cooling air,

(c) the cooling tower further comprising means defining closable openings for cooling with natural draft disposed between the annular inlet openings,

(d) the closable openings shaped to surround the annular inlet openings and to form the peripheral wall of the cooling tower as a peripheral ring in the region of the annular inlet openings, and

(e) deflecting inserts mounted within the cooling tower wall between the annular inlet openings and said means defining said closable openings, said deflecting inserts projecting into the interior of the cooling tower for guiding the flows of coolant air through the annular openings and through said closable openings independently of one another for a given distance into the cooling tower whereby the flow of cooling air through the annular openings is prevented from mixing with the flow of cooling air through said closable openings directly behind said closable openings, thereby permitting concurrent cooling with blower draft air flowing through the annular inlet openings and with natural draft air flowing through the closable openings.

4,164,257

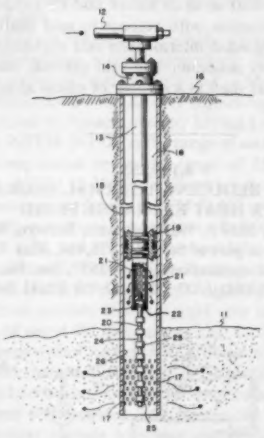
INTERNAL PROTECTION OF WELL CASING

Donald R. Anthony, Dallas; Lee Bone, III, Plano, and William G. Price, Midland, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 15, 1977, Ser. No. 860,939

Int. Cl.[2] E21B *43/00*

U.S. Cl. 166—113 **14 Claims**



1. A water injection well system for protecting the internal surface of a downhole section of casing from internal corrosion comprising:

a. a well casing extending downward from the surface to a first point in a subsurface formation;

b. injection well tubing extending downward from the surface inside said casing to a second point, said second point being at a higher elevation than said first point, said tubing having a lower end at said second point;

c. a metal member extending downward from said lower end of said tubing to said first point, said metal member being electrically connected to said casing through a metallic conductive path, said metal member having an outer surface spaced laterally from said internal surface of the section of said casing between said first and said second point; and

d. at least one galvanic sacrificial anode attached to said outer surface of said metal member between said metal member and said internal surface of said section of said

casing, said at least one anode being electrically connected to said metal member through a metallic conductive path.

4,164,258

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

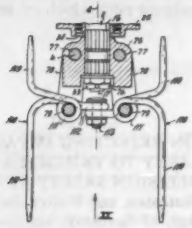
Filed Jul. 17, 1975, Ser. No. 596,828

Claims priority, application Netherlands, Jul. 18, 1974, 7409705

The portion of the term of this patent subsequent to Jan. 14, 1995, has been disclaimed.

Int. Cl.[2] A01B *33/14*

U.S. Cl. 172—59 **12 Claims**



4. A soil cultivating or rotary harrow comprising a plurality of tined soil working members arranged in a transverse row, said members being rotatable about upwardly extending axes defined by corresponding shafts journalled in a frame portion and driving means connected to said shafts, said soil working members each comprising a support and at least one tine on said support, said tine having at least one downwardly extending operative end and being pivotably connected to said support by a fastening portion, said fastening portion being freely pivotable about pivot connection means that defines an axis inclined to the axis of rotation of the corresponding soil working member, said fastening portion being connected to said support with upper and lower pivots and said pivots being spaced apart from each other.

4,164,259

SOIL CULTIVATING IMPLEMENTS

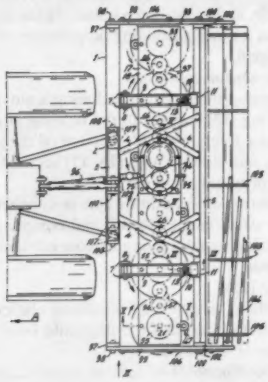
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Nov. 23, 1977, Ser. No. 854,372

Claims priority, application Netherlands, Nov. 29, 1976, 7613259

Int. Cl.[2] A01B *33/06*

U.S. Cl. 172—59 **10 Claims**



1. A soil cultivating implement comprising at least one soil cultivating member that is rotatable about an upwardly extending axis defined by a respective shaft and driving means connected to rotate said member about said axis, said member comprising a support and downwardly extending tine means fastened to a plurality of pairs of resilient, interengaging strips of said support, said tine means including at least one tine having an upper fastening portion, inner limbs of said pairs of strips being shorter in length than outer limbs of the corresponding strips of the same pairs, said outer limbs being bent over towards one another at outer ends thereof to comprise respective parts of holders for said tines, further parts of said holders being plate means clamping said outer ends to secure said strips in position, said plate means cooperating with said fastening portion of the tine.

4,164,260

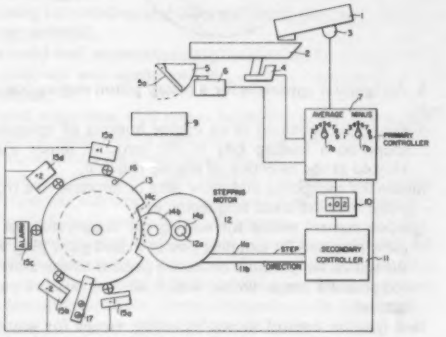
METHOD AND APPARATUS FOR CONTROLLING THE AVERAGE WEIGHTS OF COMMODITIES IN PACKAGE FORM

Stewart B. Blodgett, Houston, Tex., assignor to Mira-Pak, Inc., Houston, Tex.

Filed Jan. 23, 1978, Ser. No. 871,335

Int. Cl.[2] G01G *19/52*

U.S. Cl. 177—1 **16 Claims**



1. A method for controlling the minimum weight and the average weight of charges of product prior to packaging said product so as to assure that no charges are below a given minimum weight and to maintain the average weights of the charges within predetermined limits over the operating period of the machine producing the product charges, said method comprising:

establishing an average weight and minimum weight for said charges;

weighing each of said charges;

determining whether the weight of each of the weighed charges is less than said minimum weight and modifying the charges whose weights are below said minimum weight so that the final weight of all charges is above said minimum weight;

determining the deviation of the final weight of each of said charges from said average weight so as to provide an indication of the amount and direction of the deviation from the average for each said charge;

summing algebraically all of the indications of the deviation from the average for each of said charges so as to produce, after each charge has been finally weighed, a running algebraic summation representative of the total net deviation from the average up through the charge which has just been weighed;

correctively controlling the production of the charges whenever the said algebraic summation exceeds a preselected level in either a positive or negative direction while continuing the summing process such that the each determination of whether said preselected level has been ex-

ceeded is based on the total number of charges produced up through the most recent charge.

4,164,261

IGNITION APPARATUS FOR ROTARY PISTON ENGINE

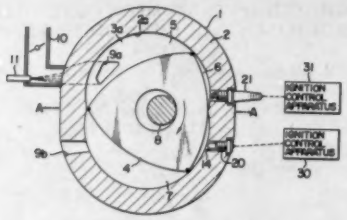
Toshihiko Igashira, Toyokawa; Shunzo Yamaguchi, Okazaki; Hisasi Kawai, Toyohashi; Seiji Morino, and Naoki Umeda, both of Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 22, 1977, Ser. No. 854,038

Claims priority, application Japan, Jun. 13, 1977, 52-69625; Sep. 2, 1977, 52-106017

Int. Cl.[2] F02B *53/12*

U.S. Cl. 180—54 R **8 Claims**



1. An ignition apparatus for a rotary piston engine comprising:

a glow plug mounted in an engine housing of epitorocoid shape on a leading side of the torocoid minor axis as viewed in the direction of engine rotation;

means for energizing said glow plug in response to a trigger pulse signal of fixed frequency; and

ignition control means for sensing the temperature of said glow plug and for stopping power to said glow plug when the sensed temperature exceeds a present temperature in a temperature range within which air-fuel mixture can be ignited,

said ignition control means including means for sensing a change in a resistance of a heater coil of said glow plug to intermittently power said heater coil.

4,164,262

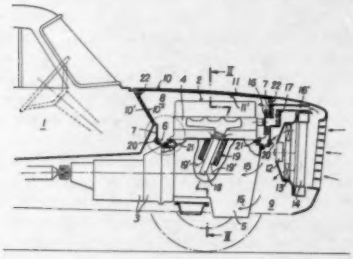
MOTOR VEHICLE

Othmar Skatsche; Heinz Fachbach; Gerhard Thien; Hans List, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sep. 23, 1977, Ser. No. 836,216

Int. Cl.[2] B60K *11/00*

U.S. Cl. 180—54 A **7 Claims**



1. A motor vehicle, comprising a frame, an engine compartment defined by vehicle body components including side walls, a front wall and a rear end wall and containing an engine having an engine block mounted on said frame, said engine having an exhaust manifold, a water radiator and a fan associated therewith for cooling same, said engine having an oil sump, means dividing said compartment into an upper and a lower space, said oil sump being secured in a body-sound-insulating manner to said engine block, said dividing means comprising an elastic membrane disposed between said oil sump and said body components and completely surrounding said oil sump at an upper edge thereof, said upper space defining a closed sound-suppressing encapsulation which comprises said side walls, said front wall and said rear end wall, said encapsulation further comprising a substantially horizontal frame extending from said upper edge of said oil sump and in contact with said elastic membrane, a detachable cover at an upper side of said encapsulation, said radiator and said fan being located outside said encapsulation, and said radiator having a hot air exhaust path which by-passes said encapsulation.

4,164,263

VIBRATION REJECTING IMPACT SENSOR, PARTICULARLY TO TRIGGER A VEHICULAR COLLISION SAFETY SYSTEM

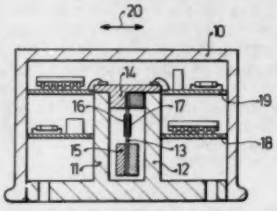
Frieder Heintz, Stutensee, and Walter Jansche, Durmersheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,558

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1976, 2655604

Int. Cl.[2] B60R *21/00*

U.S. Cl. 280—735 **9 Claims**



1. For installation in a vehicle having a vehicular collision safety restraint system, a vibration rejection, impact sensing unit comprising

a common housing (**10, 11, 12**) and

the combination of an impact sensor effectively immune to vibration or concussion, but sensing a collision impact of the vehicle, and providing a sensor signal, with an electric evaluation circuit providing a collision safety restraint output signal;

wherein the sensor comprises

a resilient spring-mass system including a movable mass (**15**) and a spring (**13**) secured in the housing at an attachment portion at a freely movable portion of the spring (**13**),

and at least one strain gauge (**16, 17**) secured to the spring (**13**) and providing said sensor signal;

and the electric evaluation circuit is connected to said at least one strain gauge (**16, 17**) and comprises

means rejecting signals having a frequency above a predetermined limit,

an amplifier (**22**),

and a threshold circuit (**24**) providing the collision safety restraint output signal if the threshold level of the threshold circuit is exceeded,

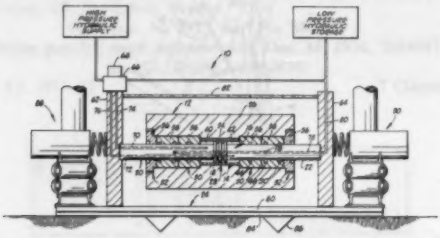
the circuit components of said evaluation circuit being located within said common housing for closely adjacent physical association of said circuit components with said at least one strain gauge.

4,164,264

HIGH PRESSURE SEALING APPARATUS

Delbert W. Fair, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 3, 1977, Ser. No. 848,164
Int. Cl.[2] G01V 1/04; F01B 15/00
U.S. Cl. 181—119 4 Claims



2. A transducer for inducing waves in an elastic medium such as the earth including a hydraulic fluid system having a high pressure side and a low pressure side, said transducer comprising:

a reaction mass member having a plurality of cylinder bores extending therethrough;

a piston member having a piston and oppositely extending piston rods reciprocally disposed in each of said cylinder bores;

means disposed within each of said piston members for introducing fluid under pressure from said high pressure side into cylinder bores alternately on opposite sides of each of said pistons for reciprocating said piston members relative to said mass member;

fluid bleed-back means disposed within the piston member for continuously returning the fluid which flows between said cylinder bore and the piston rods to said low pressure side of said hydraulic fluid system; and

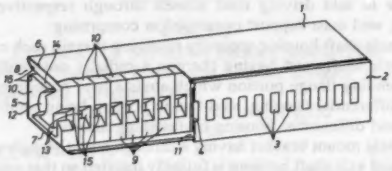
a frame interconnecting the ends of the oppositely extending piston rods, said frame having a surface thereon for engaging a surface of the elastic medium.

4,164,265

BAFFLE

Eckhard Kucharczyk, Netphen, Fed. Rep. of Germany, assignor to Siegenia-Frank KG., Siegen, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,152
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716957
Int. Cl.[2] E04F 17/04; F24F 7/00
U.S. Cl. 181—224 13 Claims



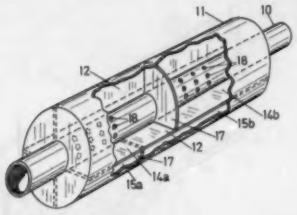
1. A baffle liner of molded shapes made from elastomeric material for lining the interiors of housings of sound absorbing ventilator devices comprising a plurality of plates, each having two broad sides and a transverse aperture through the plate thickness and at least two grooves in the broad sides of the plate leading from said aperture to opposite narrow sides of the plate and forming exit openings in said respective sides.

4,164,266

EXHAUST GAS MUFFLER

Lars Collin, Vasterbergsgatan 3, Molndal, Sweden (43139), and Henrik Landalv, Attehogsgatan 10a, Goteborg, Sweden (41674)

Filed Aug. 8, 1977, Ser. No. 822,907
Claims priority, application Sweden, Aug. 19, 1976, 7609215
Int. Cl.[2] F01N 1/08, 3/06
U.S. Cl. 181—250 16 Claims



1. In a muffler for dampening exhaust noise composed of sound waves having various frequencies:

an axially extending tube adapted to be connected to an exhaust pipe,

a casing surrounding said tube, and being devoid of dampening material,

first axial wall means extending longitudinally of said tube to subdivide said casing into at least two mutually separate spaces,

second transverse wall means extending radially from said tube to subdivide at least one of said spaces into at least two mutually separate chambers, and

openings in the wall of said tube for individually communicating the interior of said tube with said at least one subdivided space and said two chambers,

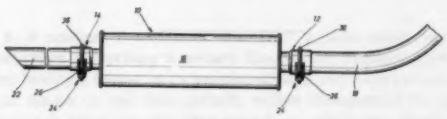
the openings communicating said tube with said at least one sub-divided space being located along part of the axial extension of said tube, to form said space into a resonator compatible with the lowest frequency to be dampened.

4,164,267

EXHAUST MUFFLER

Sam W. Meineke, and Harold Nedell, both of 6330 W. Loop South, Suite 103, Bellaire, Tex. 77401

Continuation of Ser. No. 598,709, Jul. 24, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,158
Int. Cl.[2] F01N 1/00
U.S. Cl. 181—255 4 Claims



1. A muffler comprising:

an elongate body portion having a housing and end walls at opposite ends of said housing, each of said end walls defining an opening;

gas passage means interior said elongate body portion;

a first pipe fabricated from killed steel and connected at one end to said opening in a first of said end walls, the other end of said first pipe being operable to provide a first region of enlarged diameter with respect to a diameter of a remaining length of said first pipe, said first enlarged region having a diameter enlarged up to about 125% of the diameter of said remaining length of said first pipe.

4,164,268

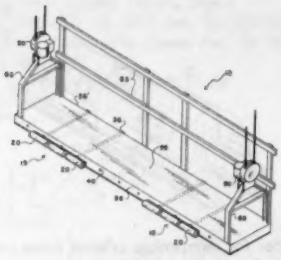
ADJUSTABLE PROTECTIVE ROLLERS FOR SUSPENDED SCAFFOLDING

Paul Jones, and John H. Scheffer, both of Greensboro, N.C., assignors to Clear Day, Inc., Greensboro, N.C.

Filed Mar. 20, 1978, Ser. No. 890,629

Int. Cl.[2] E04G *3/10*

U.S. Cl. 182—150 **2 Claims**



1. A suspended scaffold for use in transporting equipment and/or personnel along the vertical wall of a building or structure, said suspended scaffold comprising:

(a) a load bearing platform including a forward edge, an opposite rear edge, and a plurality of passageways extending through said platform between said front and rear edges;

(b) suspension means operably connected to said platform for moving said platform along the vertical building wall while maintaining said platform horizontal with said front edge facing said building wall;

(c) a plurality of roller assemblies; each including:

(i) a mounting bracket carrying at least one force absorbing elongated roller formed of a resilient material;

(ii) at least two support rods secured to said mounting bracket and extending rearwardly therefrom, said support rods, when assembled, extending entirely through selected ones of said passageways from said front through said rear edge for detachably mounting said roller assembly at one of various selected points along said forward side of said platform;

(d) means for retaining said support rods in assembled relation through said platform; whereby said roller assemblies may be positioned on said platform at spaced points corresponding to the spaces between solid building portions extending between the windows thereof so that said rollers move along the building wall preventing damage thereto by said scaffold.

4,164,269

SAFETY BRACKET FOR SECURING LADDER IN PLACE

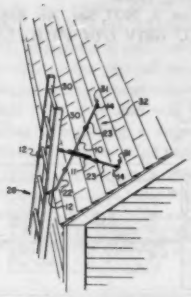
Charles E. Jackson, Newton, N.C., assignor to E. L. Hilts & Company, Charlotte, N.C.

Filed Oct. 23, 1978, Ser. No. 953,962

Int. Cl.[2] E06C *7/48*

U.S. Cl. 182—229 **7 Claims**

1. A safety bracket for securing a ladder in place against a building structure, said safety bracket comprising two extending arm members, and interconnection means disposed intermediate the respective ends of said arm members to connect such arm members in crossing relation with each said arm member being slidable with respect to the other, each of said arm members having first attachment means at one end thereof for attaching said arm member to said ladder, and each said arm member having second attachment means at the other end



thereof for receiving a projecting member secured to said building structure.

4,164,270

MAST SUPPORT CONSTRUCTION FOR FORK LIFT TRUCK

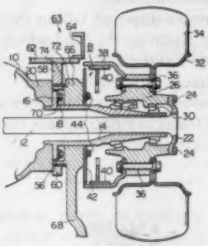
Hiroshi Osada, Tokyo, and Kazuo Murata, Tachikawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 14, 1978, Ser. No. 896,620

Claims priority, application Japan, Apr. 27, 1977, 52-52649[U]

Int. Cl.[2] B66B *9/20*

U.S. Cl. 187—9 R **3 Claims**



1. A mast support construction for a fork lift truck having a body proper, a mast assembly located at one end of said body, a pair of driving road wheels located near said mast, and a differential housing positioned between said driving road wheels, said differential housing containing therein a differential gear mechanism which transmits a driving force from an engine to said driving road wheels through respective axle shafts, said mast support construction comprising:

an axle shaft housing spacedly receiving therein each of said axle shafts and having thereon a radially outwardly extending flange portion which abuts a base portion of said differential housing, said flange portion being secured to said differential housing by fastening means;

an axle mount bracket having a through bore through which said axle shaft housing is fittingly inserted so that said axle shaft housing is supported via said bracket by said body proper, said bracket being formed at a portion thereof facing said base portion of said differential housing with a circular recess defined within a cylindrical wall portion encircling said circular recess, said flange portion of said axle shaft housing being wholly received in said circular recess of said first bracket; and

an arm member having a first portion thereof slidably disposed about said cylindrical wall portion and a second

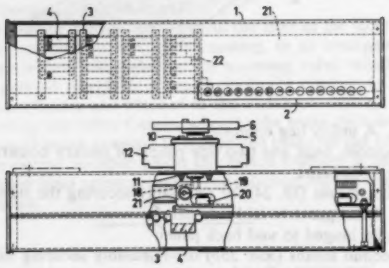
portion thereof to which said mast assembly is firmly fixed.

4,164,271

SYSTEM FOR INDICATING STOP LEVELS FOR AN ELEVATOR

Gunnar Bergström, Skellefteä, Sweden, assignor to Linden-Alimak AB, Skellefteä, Sweden

Filed Dec. 13, 1977, Ser. No. 860,240
Claims priority, application Sweden, Dec. 14, 1976, 7614047
Int. Cl.[2] B66B *1/36, 1/50*
U.S. Cl. 187—32 **7 Claims**



1. A system for indicating the stop levels for an elevator car traveling in a hoist shaft, said system comprising:

a rotatable control element comprising a horizontal shaft journally mounted on the elevator car and a plurality of uniformly spaced, radial arms extending from said control element shaft into the hoist shaft;

a linearly movable slide mounted on said elevator car;

transmission means connecting said control element and said slide for moving said slide linearly in response to rotation of the control element;

a plurality of projections disposed in said hoist shaft, at least one projection being associated with each stop level for the elevator car, said projections extending into the path of the arms of the control element such that as the elevator car moves past each projection, the projection will engage one of said arms and cause the control element to rotate through an angle equal to the angle between adjacent arms, and

at least one line of switches positioned in the path of said slide, each line of switches forming an angle with a line generally defined by the adjacent end of the slide such that the switches are successively actuated as the slide moves;

whereby each rotation of the control element in response to engagement of one of said arms by one of said projections will move the slide member one step and actuate one of the switches to indicate the stop location associated with the engaged projection.

4,164,272

CLEARANCE SENSING BRAKE ADJUSTER

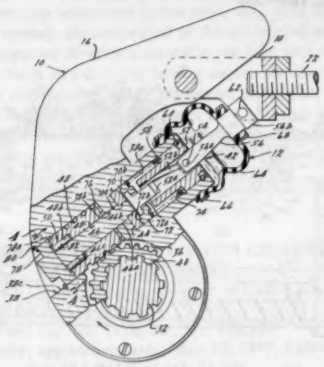
Richard F. Neuman, Farmington, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 3, 1978, Ser. No. 874,732
Int. Cl.[2] F16D *65/56*
U.S. Cl. 188—196 D **9 Claims**

1. A brake clearance adjuster including a lever housing having first and second intermeshed gears disposed therein, said second gear operative to rotate said first gear with said housing for applying and releasing said brake in response to pivotal reciprocating movement of said housing, and said second gear rotatable relative to said housing for rotating said first gear relative to said housing and adjusting the brake clearance, wherein the improvement comprises:

a torque limiting clutch reciprocatingly rotatable relative to said housing in response to said pivotal reciprocation of said housing for effecting rotation of said second gear relative to said housing; and

a one-way clutch interposed between said torque limiting clutch and said second gear, said one-way clutch operative to drivingly connect said torque limiting clutch to



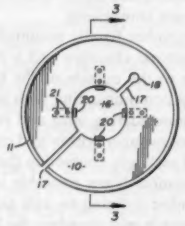
said second gear in response to rotation of said torque limiting clutch in one direction and operative to drivingly disconnect said torque limiting clutch from said second gear in response to rotation of said torque limiting clutch in said other direction.

4,164,273

RESILIENT SHIELD FOR VEHICLE WHEEL BRAKE ASSEMBLIES

Eugene L. McElroy, Enon Valley, Pa., assignor to Enon Valley Industries, Inc., Enon Valley, Pa.

Filed Oct. 27, 1977, Ser. No. 846,253
Int. Cl.[2] F16D *65/00*
U.S. Cl. 188—218 A **6 Claims**

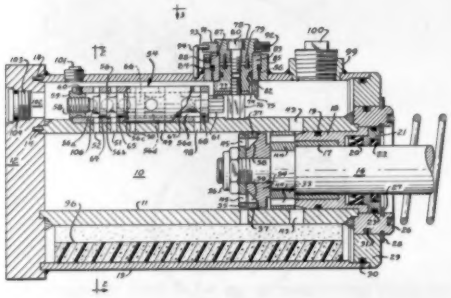


1. A resilient non-metallic sheild for vehicle wheel brake assemblies comprising a unitary flexible and resilient plastic disc having a flange on its peripheral edge and a central aperture, means on said disc partially within the aperture for engagement about an axle of a vehicle to which the shield is applied, said means spacing the edge of the disc about the aperture from said axle, said disc having a continuously open slot defined therein on a transverse diameterical line extending partially thereacross so as to permit the same to be distorted and positioned over said axle, said slot extending through said disc peripheral edge on one side of said aperture, along said diameterical line into said central aperture and continuing along said diameterical line a distance beyond said aperture to a terminal point of said slot located between said aperture and said disc peripheral edge on the other side of said aperture, said disc being unitary and unsplit in the area thereof which is located between said terminal point and said disc peripheral edge.

4,164,274
ADJUSTABLE SHOCK ABSORBER

Willard J. Schupner, Palatine, Ill., assignor to Efdyn Corporation, Geneva, Ill.

Filed Feb. 9, 1978, Ser. No. 876,348
Int. Cl.[2] F16F 9/44
U.S. Cl. 188—285 3 Claims



1. A shock absorber including a cylinder part defining a cylinder, a piston in said cylinder, a housing about said cylinder part and defining a space therebetween to serve as a hydraulic fluid reservoir, said cylinder part defining an axis along which said piston moves, said cylinder part having at least one port therethrough which port forms part of a fluid passage between the cylinder and the reservoir to permit hydraulic fluid to flow through said passage from the cylinder to the reservoir when the piston is forced in one direction in said cylinder by an externally applied force to be absorbed, and valve means in said space and in the fluid passage to permit adjustment of the rate of flow of the hydraulic fluid from the cylinder to the reservoir, said valve means including an external adjustment handle, said shock absorber being characterized by said valve means comprising:

a valve body member fixedly mounted in the reservoir and having an internal chamber and a pair of openings from the chamber to the outside of the body member, one of said openings communicating with said port and the other opening communicating with said reservoir;

an annular spool member within said chamber and having an annular land sealingly contacting the valve body member, said spool member being rotatable in said chamber;

said body member defining an axis along which said spool member moves in said chamber, the latter axis being parallel to said cylinder part axis, said chamber being cylindrical, whereby as the spool member moves the extent to which said land covers the chamber end of at least one of said openings is varied, despite the rotational portion of the spool member; and

an adjustment device connected to the spool member for so moving said spool member, said device including said handle, said device including

thread means interconnecting said body member and said spool member whereby rotation of the spool member moves it axially with respect to the body member,

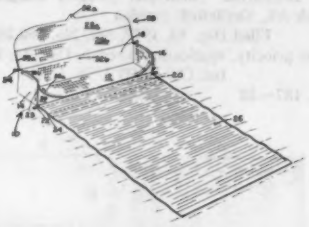
shaft means extending through said housing, normal to said body member axis and rotatable with respect to said housing, said shaft means having external and internal ends with said handle being secured to said external end, and

gear means interconnecting the internal end of the shaft means and said spool member for rotating the spool member in response to rotation of the handle.

4,164,275
UTILITY BAG—BEACH MAT

Yvette L. Davis, 105 Oak Ave., Kentfield, Calif.

Filed Jun. 15, 1978, Ser. No. 915,659
Int. Cl.[2] A45C 9/00
U.S. Cl. 190—2 9 Claims



1. A utility bag comprising

bottom, back and two side panels of unitary construction;

a front panel;

first means (23, 24) for releasably securing the sides of said front panel to said side panels;

a lid hinged to said back panel;

second means (35*a*, 35*b*) for releasably securing said lid to close against said front panel; and

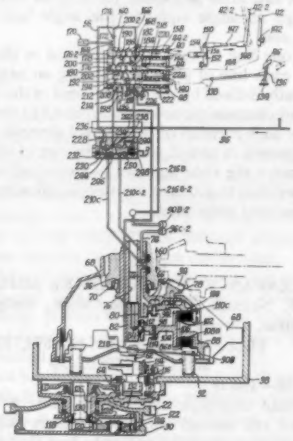
a mat of a size to accommodate a person thereon;

one end of said mat being secured to one of said front and bottom panels.

4,164,276
CLUTCH-BRAKE STEERING MECHANISM FOR TRACTORS

Daniel B. Shore, Niles, and Probir K. Chatterjea, Mount Prospect, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 561,119, Mar. 24, 1975, Pat. No. 4,015,619.
This application Jul. 26, 1976, Ser. No. 708,956
Int. Cl.[2] F16D 67/04
U.S. Cl. 192—13 R 7 Claims



1. Steering-by-driving system for a common output member which is rotatable including:

clutch-brake mechanism for controlling rotation of the common output member, said clutch-brake mechanism including actuatable clutch and brake cylinders which, when actuated at the same pressure, act primarily in alteration to

one another to engage the brake and release the clutch under low pressure on both, and to release the brake and engage the clutch under high pressure on both;

steering valve mechanism having an inlet in the inlet one of its inlet and outlet sides and having a metering valve on the inlet side;

clutch and brake conduit connected at one end to the outlet side of the steering valve mechanism and connected at the other end to the respective clutch and brake cylinders, said metering valve effective to supply fluid at the same pressure through the clutch and brake conduit to the clutch and brake cylinders;

a tow valve reposing in the clutch conduit for blocking same, and having a pressure chamber with pressure movable means therein to cause operation of the tow valve to a valve-open condition; and

pressure-fitting means connected to the inlet of the steering valve mechanism for communicating, in an emergency, pressure fluid controlled by the metering valve which is transmitted therefrom through the brake conduit to the brake cylinder and blocked in the clutch conduit by the reposing tow valve therein, whereby the brake cylinder is actuated under pressure to release the brake on the common output member whilst the clutch cylinder is being blocked from pressure and effectively keeping the clutch released.

4,164,277

SYSTEM FOR CHARGING A PLURALITY OF PROCESSING MACHINES

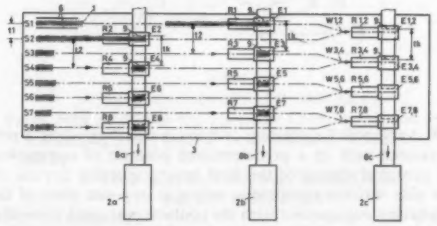
René Fluck, Schleitheim, and Franz Rüegg, Neuhausen am Rheinfall, both of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jan. 30, 1978, Ser. No. 873,538

Claims priority, application Switzerland, Jan. 28, 1977, 1090/77

Int. Cl.[2] B65G *47/51*

U.S. Cl. 198—369 **9 Claims**



1. In a conveyor system for charging at least two processing machines with flat items, including a trunk conveyor belt; means defining at least eight parallel, spaced channels oriented in the conveying direction of the trunk conveyor belt for guiding the items on the trunk conveyor belt in at least eight rows; a separate feeder aligned with each channel for receiving the items from the associated channel and for depositing identical groups of items on at least two conveyor tracks arranged above and transversely to the trunk conveyor belt for advancing the item groups to the processing machines arranged at a respective discharge end of the conveyor tracks, the improvement wherein with each said feeder there is associated a separate ramp; each ramp having an inlet end adjoining the trunk conveyor belt for receiving the items from the associated channel and an outlet end operatively coupled with the associated feeder for introducing the items thereinto from the associated ramp; each ramp including movable means for setting the ramp into an operative position in which the items advancing in the respective channel are transferred to the ramp from the trunk conveyor belt and an inoperative position in which the items advancing in the respective channel pass by the ramp without being transferred thereto; the improvement further comprising a standby conveyor track arranged above and transversely to the trunk conveyor belt and downstream of said conveyor tracks as viewed in the direction of item feed on said trunk conveyor belt; a plurality of standby feeders coupled to said standby conveyor track; a separate standby ramp associated with each standby feeder; each standby ramp having an inlet end operatively connected to the trunk conveyor belt and an outlet end operatively connected to the associated standby feeder; and a separate diverter coupled to the inlet end of each standby ramp; each said diverter having means for selectively advancing, to the standby ramp associated therewith, items forwarded on said trunk conveyor belt in a plurality of said channels beyond the respective said ramps for charging a standby processing machine arranged at a discharge end of said standby conveyor track.

4,164,278

CONTINUOUS PUSHER DEVICE FOR CIGARETTE PACKING MACHINES

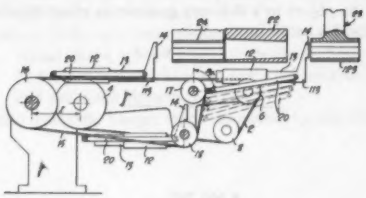
Pasquino Gurioli, Bologna, Italy, assignor to CIR-S.p.A-Divisione SASIB, Bologna, Italy

Filed Apr. 20, 1978, Ser. No. 898,192

Claims priority, application Italy, May 10, 1977, 12599 A/77

Int. Cl.[2] B65G *65/42, 19/10*

U.S. Cl. 198—487 **3 Claims**



1. In a cigarette packing machine a pusher device for the ejection of cigarette groups formed in a composition chamber from the said composition chamber into a receiving pocket comprising a first continuous endless conveyor provided with pushers mounted thereon, said pushers sequentially engaging the said composition chamber in the direction of the axis of the cigarette and thus ejecting from the said chamber the formed cigarette group, wherein the improvement consists in that each pusher is carried by a supporting rod which is telescopically slidable in a tubular carrier element rotatably mounted on said first conveyor and that the telescopically slidable supporting rod is connected through a crank linkage to a second endless conveyor parallel to the said first conveyor, while the tubular carrier element is mounted on a pin rotatable on a support provided on the first conveyor and is connected through another crank linkage a third endless conveyor parallel to the first conveyor, the first conveyor being located forwardly with respect to the other two conveyors, all the said three conveyors rotating synchronously and in the same direction.

4,164,279

ASSEMBLY FOR FEEDING OBJECTS FROM A CONVEYOR TO A PRINTING STATION AND A PRINTING MACHINE HAVING SUCH A FEEDING ASSEMBLY

Jean-Louis Dubuit, 74, Boulevard Voltaire, 75011 Paris, France

Filed Oct. 11, 1977, Ser. No. 840,786

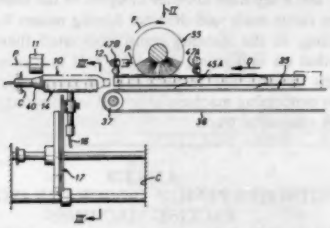
Claims priority, application France, Oct. 15, 1976, 76 31017

Int. Cl.[2] B65G *37/00*

U.S. Cl. 198—492 **14 Claims**

1. A transfer assembly comprising a supply conveyor carrying objects in continuous motion in a first direction, a first

selector finger operative to allow one object to be introducted to an ejection location at the discharge end of the conveyor and holding back following objects momentarily, and a second selector finger for retaining the object at the ejection location momentarily, means for exerting a component of force against said last mentioned object parallel to said first direction for propelling it beyond the discharge end to a waiting transfer



carriage, stop means aligned with and spaced from said supply conveyor for stopping a propelled object in alignment with said transfer carriage, and means for mounting said transfer carriage for reciprocating curvilinear translatory movement in a plane perpendicular to the first direction from its position for receiving the object to a delivery position in plane parallel to said position for receiving.

4,164,280

ROLLER CONVEYOR

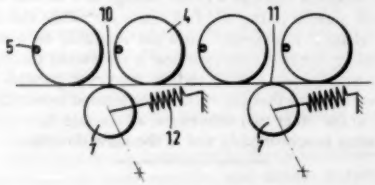
Walter Duttine, Offenbach; Helmut Kratz, Rodgau; Harald Bosch, Hausen, and Gerhard Steigerwald, Mainhausen, all of Fed. Rep. of Germany, assignors to DeMag Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Mar. 31, 1978, Ser. No. 892,340

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714862

Int. Cl.[2] B65G *13/06*

U.S. Cl. 198—781 **7 Claims**



1. A material hesitation system for a roller conveyor line, comprising

(a) a plurality of spaced rollers defining a hesitation area;

(b) an endless drive belt frictionally engaging said plurality of rollers; the improvement characterized by

(c) an unbalancing weight disposed in each of said plurality of rollers adjacent the periphery thereof;

(d) the surface of said drive belt facing said rollers having alternating areas of high and low coefficients of friction;

(e) the power transferred from said low frictional coefficient areas to said rollers being below that required for the return momentum of said unbalancing weights, but sufficient to maintain momentum of already revolving rollers; and

(f) the power transferred from said high frictional characteristic areas being greater than the return momentum of said unbalancing weights.

4,164,281

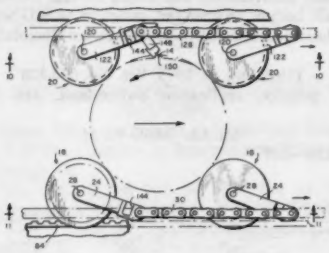
SPOTTING MACHINE

Edward A. Schnier, Hubbardston, Mass., assignor to A-T-O, Inc., Cleveland, Ohio

Filed Apr. 27, 1977, Ser. No. 791,230

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—394 **24 Claims**



15. Apparatus for rotating containers traveling along a predetermined path to a predetermined position of orientation, said containers being of the kind having spotting devices on their side surfaces comprising means at opposite sides of the path having engagement with the containers at quadrilaterally-spaced points on their peripheral surfaces, said means at one side of the path of movement constituting drive rolls and at the other side idler rolls, said drive rolls and idler rolls having tangential rolling engagement with the containers, means for rotating the drive rolls at the one side to impart rotation to the containers, said drive rolls comprising wheels provided with friction-engendering tires for engagement with the containers, said wheels having hubs, drivers rotatably mounted on the hubs and means holding the drivers on the hubs, friction disks mounted between the drivers and the faces of the wheels and spring means rotatable with the drivers yieldably pressing the friction disks aginst the faces of the wheels, said idler rolls at the other side being freely rotatable as the containers turn and supporting the containers against overturn and a positioning dog at one side operable by engagement with the spotting means on the containers to stop rotation of the containers at said predetermined position of orientation.

4,164,282

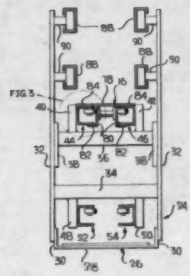
Patent Not Issued For This Number

4,164,283

FRICTION-REDUCING HIGH SPEED CHAIN GUIDES

Louis Flajnik, Berwyn, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,189
Int. Cl.[2] B65G *15/62, 17/06, 21/20*
U.S. Cl. 198—840 10 Claims



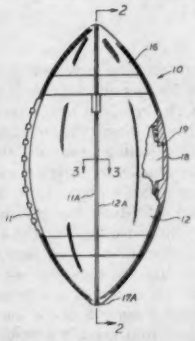
1. A guide for guiding a link conveyor around a curved path, said guide having a curvature in accordance with the desired curved path, said guide being in the form of a structural section and including a conveyor supporting rail presenting a wide and flat substantially horizontal supporting surface, for directly supporting said link conveyor and a plurality of roller elements carried by said rail in partially vertically overlapping relation and projecting radially beyond said rail for engagement with a link conveyor to determine the curved path of said conveyor.

4,164,284

LIQUID CONTAINER NOVELTY

Frank Witt, 57 Poplar St., Trumbull, Conn. 06611, and Stephen Semanchik, 9-D Fairfield Condominiums, Bridgeport, Conn. 06606

Filed Nov. 28, 1977, Ser. No. 855,187
Int. Cl.[2] B65D *11/16*
U.S. Cl. 206—217 7 Claims



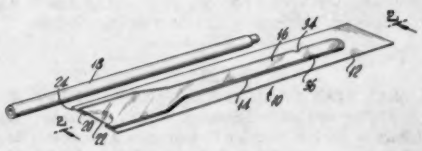
1. A liquid container comprising:
a pair of complementary outer rigid shells defining a major portion of a predetermined simulated ball shape,
said shells each having complementary interlocking edge portions and
each of said shells having an inturned integrally formed flange portion,
said inturned flanges defining an opening,
a container having a body portion and a connected neck portion,
said body portion complementing the shape of said outer shells,
and said body portion being spaced from said shells internally thereof,
said neck portion extending through said opening defined by said flanges,
said body portion of said container having protruding keying means formed thereon and said shells having complementary recess keying means formed in the inner surface of said shells for fixing said container relative to said outer shells so as to prohibit relative rotation therebetween,
a cap,
said cap having a shape to define the remaining complementary portion of said predetermined ball shape,
a container closure disposed within said cap,
said closure and neck portion having complementary means for detachably connecting said closure to said neck portion whereby in the closed position, the container is sealed and said cap and shells define the total of said predetermined ball shape,
thermal insulating means disposed in the space between said container and said shells,
means defining a vent opening formed in said outer predetermined shape whereby said thermal insulating means can be formed in situ within the space between said outer shell and container therein,
and a flexible hanger strap connected to said shells.

4,164,285

THERMOMETER SHEATH

Henry P. Dorman, Arlington, Tex., assignor to Arbrook, Inc., Arlington, Tex.

Filed Apr. 26, 1978, Ser. No. 900,209
Int. Cl.[2] G01K *1/08*
U.S. Cl. 206—306 3 Claims



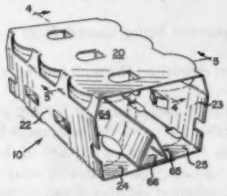
1. A thermometer probe sheath assembly, comprising: a paper backing sheet; a first plastic sheet releasably secured to said backing sheet; a second plastic sheet overlying said first plastic sheet and sealed around its periphery to the periphery of said first plastic sheet, except for an insertion opening at one end of said sheets, the edges of said plastic sheets at said one end being coterminous with each other and with one edge of said backing sheet; and said coterminous edges of said backing sheet and said first plastic sheet having notches formed therein to facilitate the insertion of a probe into said sheath.

4,164,286

TAPERED CUP PACKAGE

Robert L. Sutherland, Sloatsburg, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Feb. 10, 1978, Ser. No. 876,667
Int. Cl.[2] B65D *5/04, 85/62*
U.S. Cl. 206—434 **4 Claims**



1. A package comprising a double row of articles having the form of cups with upwardly and outwardly tapered sidewalls, said articles being arranged in transversely aligned pairs, and a wrapper formed from a blank of paperboard or similar foldable sheet material enclosing said articles so as to provide a level top wall forming panel, sidewall panels depending from opposite outboard edges of said top wall panel, and a pair of bottom wall forming panels extending in integrally hinged relation inwardly from the bottom edges of said sidewall panels, with inboard portions overlying each other and interengaging locking elements in said overlying portions, said sidewall panels having apertures at the top edges for engaging therein portions of top edges of the articles so as to restrain movement of the top portions of said articles relative to said sidewall panels, and a separator structure upstanding from said bottom wall forming panels which extends between the rows of articles, which separator structure comprises integrally hinged panels of substantial width extending from an inboard edge of one of said pair of bottom wall forming panels, said separator panels being folded into wedge forming relation with the terminal panel thereof being disposed in overlying relation with the inboard marginal portion of the other one of said bottom wall forming panels and adjoining panels in upstanding relation from opposite edges thereof and having apertures in which bottom portions of said articles engage with the bottom portions a sufficient distance apart to position the vertical axes of the articles in substantially upright relation while top edge portions of the articles in the rows are positioned in closely adjacent relation above said bottom separator structure, said interengaging locking elements in said overlying portions of said bottom panels comprising apertures in the innermost panel portion and locking and latching tabs in the outermost panel portion which are engaged in said apertures, and said terminal panel of said separator structure having portions overlying at least in part said apertures and the locking and latching tabs therein.

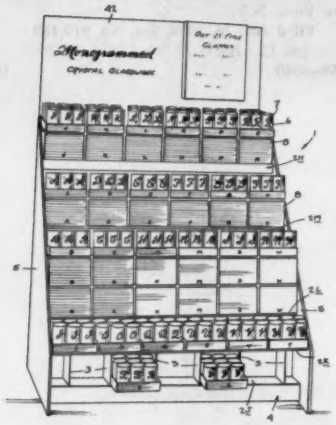
4,164,287

DISPLAY STAND AND ARRANGEMENT THEREOF

Jean A. Muller, and Ray A. Shilling, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 709,101, Jul. 26, 1976. This application Nov. 14, 1977, Ser. No. 851,442
Int. Cl.[2] A47F *5/11*
U.S. Cl. 211—134 **13 Claims**

1. A display stand comprising a plurality of shelves and upstanding standards, floor supports interfitting with said standards, said standards having slots which interfit with slots in said floor supports, said standards having a plurality of steps, at least one of said shelves being formed by mounting a panel on to a step of the standard, said floor supports having a plurality of flaps which have slots therein, the slots interfitting with slots in the bottoms and sides of the standards, said floor supports having inner flaps and outer flaps, said floor supports having vertical slots and horizontal slots, inner flaps of the floor supports interfitting with the vertical slots, and the horizontal slots interfitting with the end flaps, and the outer flaps of



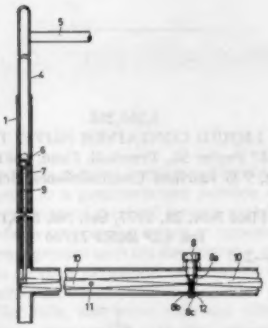
the floor supports interfitting with slots in the front of the standards to form a lower shelf member.

4,164,288

COAT HANGER STAND

Hiroshi Okazaki, 1-12, Shimojugo 5-chome, Kita-ku, Tokyo, Japan (114)

Filed Jan. 3, 1978, Ser. No. 866,234
Claims priority, application Japan, Jun. 17, 1977, 52-79347[U]
Int. Cl.[2] A47F *5/13*
U.S. Cl. 211—207 **3 Claims**



1. A coat hanger stand comprising a base means, a pair of spaced tubular uprights on said base means, a pair of inner-tube members telescopically received in the respective uprights, a cross bar attached to said inner-tube members for carrying coat hangers and a height adjusting means for releasably locking the inner-tube members at selected heights within said uprights, said height adjusting means comprising in each upright a pressure tube within said inner-tube, said pressure tube being fixed relative to said upright and terminating in a sloping upper end and a ball in said inner-tube above said pressure tube, the weight of said inner-tube and cross bar urging said ball downwardly into arcuate pressure contact on one side of the ball with an internal surface portion of the inner-tube and on the other side of the ball into arcuate pressure contact with an internal surface portion of said sloping upper end of the pressure tube to lock the inner-tube in position with respect to said pressure tube and a striker rod within said pressure tube for lifting the ball to release said pressure contact and free the

inner-tube for vertical movement relative to the upright and base means.

4,164,289

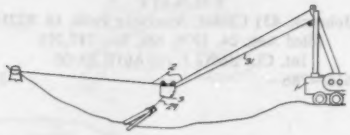
LOGGING CARRIAGE

Emil Haliewicz, Rte. 1, Box 1407, Hermiston, Oreg. 97838

Filed Jul. 25, 1977, Ser. No. 818,550

Int. Cl.[2] B66C *21/00*; B61B *7/00*; F01B *25/14*

U.S. Cl. 212—122 **11 Claims**



1. A carriage for elevated travel along a length of supporting cable, said carriage operable in conjunction with remote powered means to transport a carriage suspended load from an on-loading point to an off-loading point, said carriage comprising in combination,

a main carriage body,

rotatable sheaves on said carriage body for entrainment on said supporting cable,

a clamp assembly on said carriage body including cable clamping members connected by actuating links to pneumatic cylinders and operable to temporarily immobilize the carriage body on the supporting cable,

a carriage electrical system including a radio receiver with switch means actuable upon reception of certain radio frequencies,

solenoid valves in circuit with said switch means and operable to control said clamp assembly and a brake means,

a drum assembly including a drum shaft carried by said carriage body, said drum assembly including,

a rotatable drum structure,

a first sheave area on said drum structure about which an in-haul cable is wound, said in-haul cable having its remote end spooled about a powered drum on said remote powered means,

a second sheave area on said drum structure about which a load attachable drop line is wound,

a spring case with multiple springs, said case coupled to said drum structure and operable to rotate the latter to pay out the drum carried drop line for load attachment purposes while simultaneously retrieving said in-haul line,

said drum structure rotatable by the in-haul line powered by the remote powered means during the retrieval of the load attached drop line during a side-haul pulling of the load to carriage proximity, said in-haul cable thereafter operable to retrieve the load supporting carriage to the powered means for off-loading purposes, and

said brake means operable intermediate the carriage main body and the drum structure to selectively brake said drum structure against rotation during carriage travel.

4,164,290

AUTOMATIC TOOL CHANGER FOR MACHINE TOOLS

Frank Zankl, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Sep. 15, 1977, Ser. No. 833,508

Int. Cl.[2] B65G *47/90*

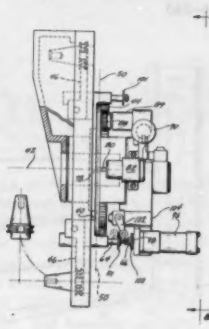
U.S. Cl. 414—739 **13 Claims**

13. A tool changer for automatically changing the tools in the rotary spindle of a machine tool which includes a stationary bed and a frame rigidly attached to said bed comprising:

a rotary drum storing a plurality of tools for use in said rotary spindle, said rotary drum being rotatably mounted on said frame for rotation about a horizontal axis;

a ready station at the bottom of said rotary drum for receiving one of said tools in position to be transferred to said rotary spindle and for receiving a previously used tool from said rotary spindle for return to said drum;

means for indexing said drum to locate a selected tool at said ready station;



a separate tool change arm for each of said tools carried by said drum for rotation therewith; and

each of said tool change arms being adapted to swing upwardly to transfer its associated tool between said ready station and said rotary spindle.

4,164,291

SORTING APPARATUS

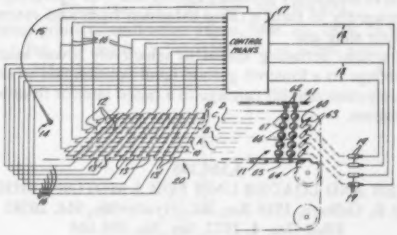
Charles A. Carlow, Edinburgh, Scotland, assignor to National Research Development Corporation, London, England

Filed Jul. 13, 1977, Ser. No. 815,304

Claims priority, application United Kingdom, Jul. 16, 1976, 29770/76

Int. Cl.[2] B07C *9/00*

U.S. Cl. 414—136 **22 Claims**



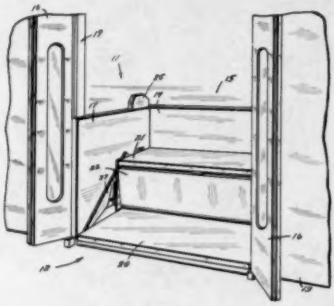
1. Sorting apparatus comprising locating means for defining an array of selectable sites and for generating for each site when selected a signal or signals identifying that site, conveying means for conveying past the array of sites objects to be sorted by selection by an operator, separating means for separating selected and unselected objects, the locating means including a movable selector member for selecting objects as they pass the array of sites by causing site-identifying signals to be generated in respect of sites corresponding to the objects selected, the separating means being connected to an output of the locating means for actuating the separating means in dependence upon site-identifying signals generated by the locating means.

4,164,292

AUTOMATIC LIFT ASSEMBLY

Lawrence E. Karkau, Lansing, Mich., assignor to Karphen Lift Company, Lansing, Mich.

Filed Nov. 28, 1977, Ser. No. 855,288
Int. Cl.[2] B60P *1/46*
U.S. Cl. 414—545 **9 Claims**



1. In an automatic lift assembly for use in vehicle or building doorways comprising:

a lift carriage movably positioned within a doorway opening, said lift carriage having a substantially U-shaped configuration wherein the base of the lift carriage is adapted to form a lower step portion;

a movable upper step pivotally positioned within said lift carriage in a normally retracted stowed step use position above and to the rear of said lower step portion, said upper step selectively extendable forwardly and downwardly so as to form a co-planar platform extension of said lower step portion;

a movable riser provided in pivotal engagement with said upper step so as to selectively extend downwardly to said lower step portion when said upper step is in its retracted stowed step use position within the lift carriage, said riser selectively extendable upwardly and outwardly to form a ramp extension from said extended upper step;

upper step and riser actuating means to selectively extend said upper step forwardly and downwardly so as to form a co-planar platform extension of said lower step portion and to selectively pivotally extend said riser upwardly and outwardly to form a ramp extension from said extended upper step; and

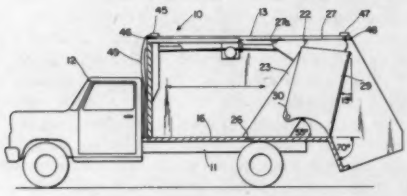
lift carriage actuating means to selectively lower said lift carriage to a lowered ground level position and to selectively raise said lift carriage to a raised interior floor level position.

4,164,293

PACKER AND LOADER UNIT FOR A MOTOR VEHICLE

George R. Oelberg, 1515 Ray Rd., Hyattsville, Md. 20782

Filed Dec. 1, 1977, Ser. No. 856,684
Int. Cl.[2] B65F *3/00*
U.S. Cl. 414—525 **13 Claims**



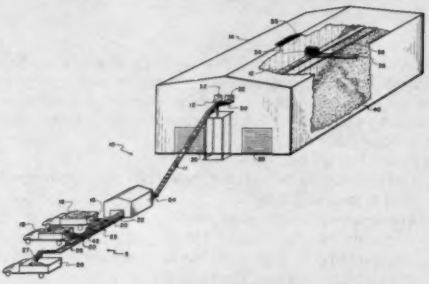
1. A packer and loader unit for a vehicle comprising a container having a floor and a rear end opening, a rear support assembly displaceable horizontally within said container and positionable at said rear end opening, a tail gate pivotally mounted to said rear support assembly and pivotable between a down-ramp position and an up-position, and means connected to said rear support assembly for displacing said rear support assembly horizontally to allow said tail gate to pivot.

4,164,294

METHOD FOR FILLING A POTATO STORAGE FACILITY

Lynn F. Johnson, 431 Calder, American Falls, Id. 83211

Filed Aug. 24, 1976, Ser. No. 717,291
Int. Cl.[2] B65G *3/10;* **A01F** *25/00*
U.S. Cl. 414—786 **2 Claims**



1. A method of effectively placing the potatoes in storage without damage comprising the steps of:

delivering a stream of potatoes to an elevated relatively small ingress site of a substantially unencumbered potato storage enclosure;

continually conveying the stream of potatoes through the ingress site into the enclosure and substantially linearly on an interior conveyor a selected distance along an elevated part of the enclosure to a predetermined variable diversion site;

continually diverting the stream of potatoes at said diversion site angularly from the conveyor to a repositionable conveyor, the two conveyors being disposed at an angle to each other, the continually diverting step comprising gently brushing the stream of potatoes counter to the displacement of said stream laterally from the interior conveyor at a predetermined site along the length thereof onto the repositionable conveyor;

dumping said stream of potatoes from the repositionable conveyor using at least in part the force of gravity onto an enlarging pile of stored potatoes, an exposed face of which is a very short distance beneath the repositionable conveyor; and

repositioning the diversion site and the repositionable conveyor from time to time commensurate with the the enlarging size and expanse of the pile of stored potatoes.

4,164,295

METHOD FOR LAYING SOD

John M. White, 5309 NW. 26th St., Des Moines, Iowa 50313

Division of Ser. No. 693,335, Jun. 7, 1976. This application Jun. 12, 1978, Ser. No. 914,675
Int. Cl.[2] B60P *1/36, 3/00*
U.S. Cl. 414—786 **9 Claims**

1. A method for laying a plurality of sod pieces each having opposite end and side edges, a grass surface and an opposite root surface, said method comprising:

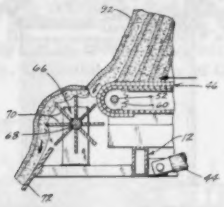
stacking said pieces of sod in a vertical stack with said grass surfaces and said root surfaces in horizontal orientation;

turning said stack on its side and placing it on a wheeled

platform in a position wherein said grass surfaces and said root surfaces are in an upstanding position;

propelling said wheeled platform over the area to be sodded;

removing said pieces of sod one at a time from one end of said stack;



reorienting each piece of sod from an upstanding position to an approximate horizontal position during removal of said piece of sod from said stack;

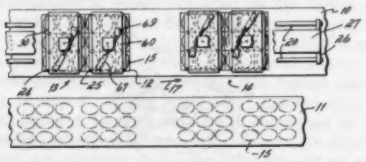
depositing said piece of sod on the area to be sodded with said root surface presented downwardly.

4,164,296

APPARATUS FOR TRANSFERRING AND ROTATING ARTICLES

Carl I. Trees, Moscow, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Filed May 11, 1977, Ser. No. 795,814
Int. Cl.[2] B65G *47/91*
U.S. Cl. 414—416 **2 Claims**



2. In apparatus including an elongated case conveyor, an elongated bottle conveyor parallel to and spaced from said case conveyor, apparatus for removing from a single case oval-shaped bottles having axes in a horizontal plane which are perpendicular to said conveyors and depositing said bottles on said bottle conveyor with their axes parallel to said case conveyor comprising,

a support movable between said case conveyor and said bottle conveyor,

two lifting plates mounted side-by-side on said support, each lifting plate having a plurality of article gripping devices depending from it, the combined lifting devices of said two plates matching the pattern of bottles in a single case,

means for moving said support to shift said plates from a position overlying said case conveyor to a position overlying said bottle conveyor,

means for shifting at least one of said plates away from the other,

means for rotating said plates through an angle of 90°,

and control means for effecting the following motions as said support moves:

(a) spread said plates apart;

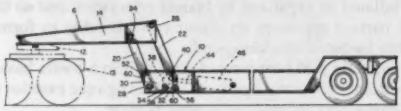
(b) rotate said plates 90°.

4,164,297

FOLDING GOOSENECK FOR TRAILER

John J. Dorwin, Hiawatha, Iowa, assignor to Barnard & Leas Mfg. Co., Cedar Rapids, Iowa

Filed Jul. 11, 1977, Ser. No. 814,163
Int. Cl.[2] B60P *1/14*
U.S. Cl. 414—481 **9 Claims**



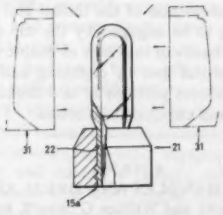
1. In a trailer structure of the character described which includes a gooseneck extension joined to a forward end of the trailer and adapted releasably to be connected to a tow unit, means for mounting the gooseneck for movement between normal position for connection with the fifth wheel of said tow unit, raised position and lowered position, and for movement of the forward end of the trailer between raised position, normal position for transport, and lowered position, said means comprising forward and rearward links pivoted at their upper end portions to rearward end portions of the gooseneck with the pivot for the rearward link above and rearwardly of the pivot for the forward link, means pivotally securing a lower end portion of the forward link to the trailer frame for rocking movement about a horizontal axis, means pivotally connecting a lower end portion of the rearward link to the trailer frame rearwardly and above the pivot for the forward link comprising crank arm means pivotally connected at one end to the lower end portion of the rearward link, rocker arm means pivotally connected at one end to the trailer frame for rocking movement about a horizontal axis, and a pivotal connection between a portion of the rocker arm means offset from its pivot and a portion of the crank arm means offset from its pivot to the link, and actuating means operatively engaging a rearward end portion of the rearward link for displacement in a vertical plane.

4,164,298

FROSTED BOTTLE OF SATURATED POLYESTER

Masanori Nishikawa, Tochigi, and Masao Hattori, Hatano, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1977, Ser. No. 779,473
Claims priority, application Japan, Mar. 31, 1976, 51/36636
Int. Cl.[2] B65D *23/00*; B29C *17/07*; B29B *3/00*
U.S. Cl. 215—1 C **3 Claims**



1. A blow-molded bottle of saturated polyester resin having a bottom wall, a trunk portion, and a neck portion, wherein at least a part of the trunk portion has a cross section which exhibits a gradual change from a crystallized opaque state at the exterior surface to a transparent state at the inner surface obtained by a process which comprises the steps of,

providing a parison of saturated polyester resin for blow-molding into said bottle,

heat-treating from the outside that portion of said parison from which at least a part of said trunk portion is to be formed, to a predetermined temperature above the glass

transition temperature and below the crystallization temperature,

maintaining said heat-treating step for a predetermined period of time to provide on said part of said trunk portion a gradual change of said structural state, in cross section, from a crystallized state at the exterior surface to a transparent uncrystallized state at the inner surface which can be inflated or expanded by biaxial orientation and so that the parison maintains its elasticity to be able to form a bottle by blow moulding, and

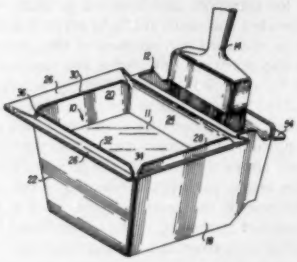
blow-molding said heat-treated parison into a bottle having a bottom wall, a trunk portion with an opaque exterior on at least a part thereof and a neck portion.

4,164,299

TRAY FOR PAINT AND BRUSHES

Patti S. Fuhr, Rte. 2, Box 119C, Mantachie, Miss. 38855

Filed Oct. 14, 1977, Ser. No. 842,302
Int. Cl.[2] B44D *3/00*; B65D *1/36, 5/28*
U.S. Cl. 220—20 **7 Claims**



1. A hand held tray for paint and brushes comprising:

(a) a first open receptacle having a bottom wall, a front wall and a rear wall each having an upper and lower edge, said lower edge being secured to said bottom wall to form said first open receptacle for holding a quantity of paint,

(b) a second open receptacle having a bottom wall, a front wall and a rear wall located adjacent said first open receptacle for holding at least one paint brush, said rear wall of said second receptacle being opposite to and spaced apart from said rear wall of said first open receptacle to form a recess for the fingers of the user's hand, and

(c) two outwardly extending, spaced apart tab means adjacent the upper edge of the front wall of said second open receptacle, one of said tab means serving to be engaged by the bottom end portion of the thumb and said other tab means serving to be engaged by the top portion of the thumb of said hands of said user to enable said tray to be held firmly by said user by engaging said tabs between said top and bottom portions of said thumb and said fingers of said hand engaging said recess.

4,164,300

DETACHABLE HANDLES AND DRUM ASSEMBLIES

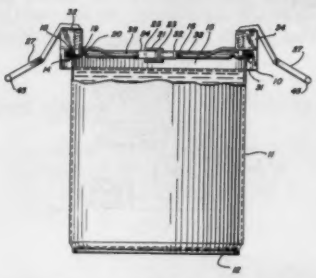
Michael E. Raczynski, and William G. Streiff, both of Holland, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 13, 1978, Ser. No. 877,176
Int. Cl.[2] B65D *25/28*
U.S. Cl. 220—94 R **10 Claims**

7. A detachable handle assembly adapted for connection to a drum having a chine and a cover attached to the chine and closing the drum, the cover having an annular downwardly extending groove adjacent the chine, said handle assembly comprising:

(a) a bracket having a pair of spaced supports adapted for engaging the underside of the chine, said bracket also having an upper, elongated portion adapted to contact and extend along the upper surface of the cover;

(b) a handle pivotally mounted on said bracket; and



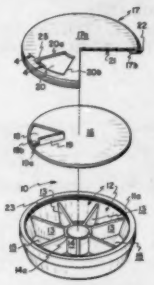
(c) a plunger movably mounted on said bracket and adapted to travel into the cover groove between said supports to secure the handle assembly to the drum and cover, said elongated portion preventing rotation of the handle assembly about the chine during lifting of the drum.

4,164,301

SAFETY LOCKING DISPENSER

Arnold A. Thayer, 1415 Highland Dr., Logan, Utah 84321

Filed Jul. 25, 1977, Ser. No. 818,517
Int. Cl.[2] B65D *85/56*
U.S. Cl. 220—253 **4 Claims**



1. A safety locking dispenser comprising,

a cylindrical housing that is closed across the bottom thereof;

a plurality of upstanding walls within said cylindrical housing, separating the interior thereof into compartments;

an upper disk means fitted at the edge thereof in a track formed in said cylindrical housing, for closing off the top thereof, so as to rotate therein, having an opening formed therethrough;

a lower disk means arranged within said cylindrical housing, below said upper disk, for closing off the top thereof so as to rotate independently of said upper disk, and having an opening formed therethrough that is similar to said opening formed through said upper disk;

means for releasably locking said upper and lower disks together consisting of,

a tab secured at one end thereof to the upper disk so as to extend in the plane thereof and to be capable of upward flexure therefrom; said tab having a notch removed therefrom, proximate to its opposite end facing oppositely to the top of said upper disk; and

a bar attached to said lower disk, arranged to extend upwardly therefrom extending through the opening in said

upper disk, which bar has a notch removed therefrom leaving a ridge that receives said tab notch thereover.

4,164,302

CLOSURE CAP HAVING LOCKING MEANS

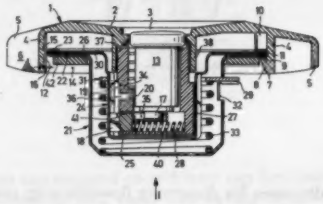
Theodor Gerdes, Langenfeld, Fed. Rep. of Germany, assignor to Blau KG Fabrik für Kraftfahrzeugteile, Langenfeld, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,335

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734394

Int. Cl.[2] B65D *55/14*

U.S. Cl. 220—210 **9 Claims**



1. A closure cover consisting of an inner cover member having a substantially cup-shaped capable of engaging with the aperture to be closed, the cover member including a sealing flange adapted to co-operate with the edge of the opening, an overlapping outer cap member rotatably mounted on the circumference of the edge, which cap member has a centrally located, firmly seated hollow support member for a cylinder lock, the lock being rotatably mounted therein, the cap member being axially supported by a radially displaceable bolt, movement of said bolt being effected by an eccentric, whereby the cover is coupled to the inner cover component, and provided with a sleeve-shaped surrounding component with base closure at the bottom for sealing against the exterior, for a freely rotatable outer cap secured by a key when the inner cover component is firmly tightened on the socket opening wherein an inner cover member has a first cup-shaped member having a radially directed edge flange including a revertive free end portion and has further a cup-shaped member including a base portion mounted therein, said further cup-shaped member having a radially outwardly directed edge flange locatable between the two portions of the flange of the first cup member, whereby the two cup members are firmly interconnected, are rotatable within the outer cap and are sealed to the exterior, and a cylinder lock centrally rotatably mounted within the outer cap which is key-actuated, the cylinder lock including radially displaceable coupling bolt which engages between ribs distributed at equally spaced intervals around the wall surface of the further cup-shaped component, which ribs project in a direction perpendicular to the axis of the component adapted to the size and shape of the bolt.

4,164,303

VENDABLE RECLOSABLE CONTAINER

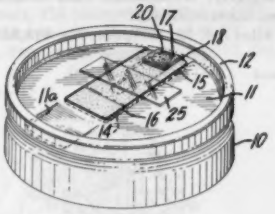
Nelson J. Waterbury, 211 E. 70th St., New York, N.Y. 10021

Filed May 22, 1978, Ser. No. 908,141

Int. Cl.[2] B65D *41/00*

U.S. Cl. 220—359 **19 Claims**

1. In a container having a lid and an opening in the lid for the discharge of the contents of the container, a three element articulated closure for the opening comprising a mounting element on the lid adjacent the inner end of the opening, a relatively rigid closure element hinged to the mounting element along a preestablished line near the inner end of the opening for overlying the opening to seal the contents within the container and a lift element hinged to the closure element along a preestablished line adjacent the outer end of the opening and the outer end of the lid and normally folded back to overlie the closure element when the latter is in the sealing condition on the lid of the container, but liftable at the hinge connection to upright position to break the seal and lift the



closure element away from the lid along the hinge connection between the mounting and the closure elements.

4,164,304

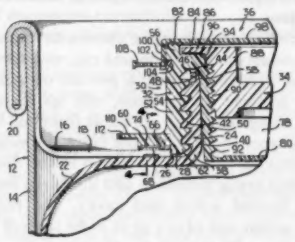
CLOSURE FOR STEEL DRUMS WITH BLOW MOLDED LINERS

Carl Roberson, Park Forest, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed May 30, 1978, Ser. No. 910,519

Int. Cl.[2] B65D *25/20, 51/20, 55/02, 41/04*

U.S. Cl. 220—465 **13 Claims**

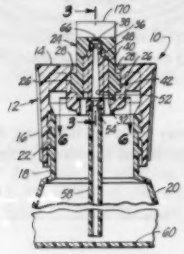


1. In combination with a drum having a molded liner, a closure assembly, said drum having a wall with an opening therethrough, said liner having a neck portion extending through said opening, and said closure assembly being disposed externally of said drum and engaging said liner neck portion, said closure assembly comprising a retainer and a closure element, said retainer having inner and outer radially spaced concentric walls joined at outer ends thereof by a bridging portion, said neck being telescoped between said inner and outer walls, completmentary threads on said neck and said outer wall securing said retainer on said drum and said liner, said inner wall being internally threaded, and said closure element being removably threadedly engaged within said inner wall, said outer wall having a radially outwardly directed annular flange remote from said bridging portion and opposing said drum wall surrounding said opening, said drum wall having upstanding projections arranged in spaced relation in a circular pattern around said opening, said projections being struck from said drum wall and having sloping upper surfaces terminating in shoulders, said drum wall being imperforate in the area of said projections and said drum wall having an inner surface with indentations therein generally corresponding to said projections, and said flange having an underside provided with recesses arranged in similar spaced relation in a like diameter circular pattern with said recesses receiving said projections to lock said retainer against releasing rotation relative to said drum wall.

4,164,305
SPRAY TYPE DISPENSING CLOSURE

Dennis A. Haggerty, Woonsocket, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Jul. 25, 1977, Ser. No. 818,537
Int. Cl.[2] B05B 7/24
U.S. Cl. 222—4 5 Claims



1. A closure for use in dispensing a spray of liquid and air from a container, said closure being adapted to be secured to the top of said container so as to close off the interior of said container, said closure having an interior and an exterior, an internal air-liquid mixing chamber, an orifice leading from said chamber to said exterior, and separate gas and liquid passage means extending from said interior into said chamber for conveying air and liquid into said chamber. in which the improvement comprises:

said closure being a dispensing closure having a cap and a spout rotatably mounted on said cap, said spout having a base and a discharge end, a portion of said cap being located adjacent to said base, said spout including an internal elongated cavity extending from said base toward said discharge end, said mixing chamber being located at an extremity of said cavity adjacent to said discharge end, said orifice being located in said discharge end,

a fitment located within said cavity, said fitment fitting closely within said cavity so as to be secured in place by engagement with the interior of said cavity,

said gas passage means including a plurality of elongated groove-like spaces between the exterior of said fitment and the interior of said cavity and holes extending through said portion of said cap,

said liquid passage means including an elongated hole extending within the center of said fitment from said base of said spout to said chamber and a hole leading through said portion of said cap,

said spout being capable of being rotated between an open position in which said holes of said gas passage means are aligned with said spaces and in which said holes of said liquid passage means are aligned with one another and a closed position in which said holes of both of said passage means in said cap are covered by said base of said spout,

sealing means for preventing leakage between said spout and said cap located on said cap and engaging said spout in both said opened and said closed positions so as to form a seal therewith, said sealing means serving to form a seal between individual of said passage means when said spout is in said open position,

said mixing passage means comprising a groove leading from the extremity of each of said groove-like spaces to said elongated hole adjacent to said mixing chamber,

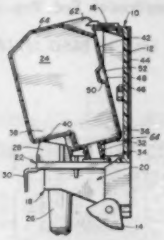
said orifice being smaller than the interior of said mixing chamber,

a liquid tube attached to said cap so as to extend therefrom, said tube being in communication with said part of said liquid passage means within said cap.

4,164,306
SOAP DISPENSER INCLUDING REMOVABLE SOAP SUPPLY CONTAINER POSITIONER AND STABILIZER

Jack L. Perrin, Los Angeles, Calif., assignor to Towlsaver, Inc., City of Industry, Calif.

Filed Apr. 3, 1978, Ser. No. 892,882
Int. Cl.[2] B67D 5/06
U.S. Cl. 222—181 7 Claims



1. In a dispenser for dispensing flowable soap and the like, said dispenser being of the type having a frame mounting a dispensing mechanism operable for dispensing soap therefrom and a container in communication with said dispensing mechanism in a soap supplying position adjacent a generally vertical frame part directing a soap supply to said dispensing mechanism, said container being selectively vertically pivotally removable from and oppositely vertically pivotally insertable into said soap supplying position and said communication with said dispensing mechanism for removal of said container upon exhaustion of said soap supply therein and insertion replacement in said soap supplying position with a container having a replenished soap supply; the combination of: upper extremity clearance recess means on said container and opening upwardly for providing clearance for forwardly extending portions of said dispenser frame during said container vertical pivoting to and from said soap supplying position; a generally horizontal projection on said dispenser generally vertical frame part projecting forwardly of a rear vertical part of said frame part; generally horizontal positioning recess means on a generally vertical back wall of said container spaced from all of said clearance recess means and vertical and horizontal extremeties of said container, said positioning recess means being located for receiving said frame part projection therein during said pivotal insertion of said container into said soap supplying position and permitting said pivotal removal of said frame part projection therefrom during removal of said container from said soap supplying position, thereby locating said container in said soap supplying position, said container positioning recess means having horizontally spaced and generally vertically extending surfaces therein facing said dispenser horizontal projection to aid in said container locating in said soap supplying position.

4,164,307
CAP WITH SUPPLY STOPPER FOR USE WITH CONTAINERS

Masanaga Imamura; Hisashi Sakai; Hiroaki Sugiyama, and Seiji Ozawa, all of Tokyo, Japan, assignors to Ricoh Company Limited, Tokyo, Japan

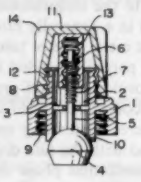
Filed Apr. 25, 1977, Ser. No. 790,323
Claims priority, application Japan, May 4, 1976, 51-54953[U]
Int. Cl.[2] B65D 47/12
U.S. Cl. 222—182 4 Claims

1. A closure for a container, comprising:

an inner cap having attachment means for releasably attaching said inner cap to a container, said inner cap having centrally located supply opening means and a valve seat located at the inner end of said supply opening means;

a reciprocable valve element sealingly engageable with said

valve seat, an operating rod extending outwardly from said valve element through said supply opening means and resilient means located in said supply opening means outwardly from said valve element for urging said rod outwardly to urge said valve element into sealing engagement with said valve seat, said operating rod being movable against the urging of said resilient means to move said valve element away from said valve seat whereby to permit dispensing of the contents of said container;



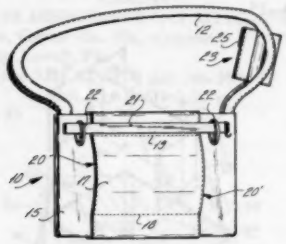
an outer cap mounted on said inner cap for closing the outer end thereof, said outer cap having first interengaging means rotatably engaged with corresponding means on said inner cap for releasably retaining said outer cap in position on said inner cap, said outer cap also having second interengaging means separate from said first interengaging means and interengaged with said operating rod for positively mechanically moving said operating rod outwardly in response to rotation of said outer cap relative to said inner cap whereby to move said valve element into tighter sealing engagement with said valve seat.

4,164,308

LADY'S HANDBAG

Francisco Gautier, c/o University Club, 1 W. 54th St., New York, N.Y. 10019

Filed Oct. 20, 1978, Ser. No. 953,290
Int. Cl.[2] A45C *1/04*
U.S. Cl. 224—45 R **4 Claims**



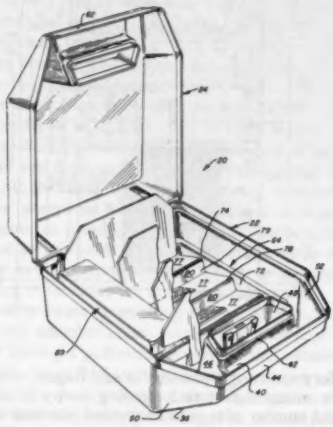
1. A lady's handbag adapted to be carried with improved security, comprising a main article-carrying bag-shaped portion, secured to said main portion near corners thereof a strap adapted to be carried over the back of the wearer's neck, the main portion having an exterior face adapted to face the front of the wearer's torso when the handbag is carried with the strap over the back of the wearer's neck, means forming pockets on said face for receiving both of the wearer's hands when the handbag is carried with the strap over the back of the wearer's neck, a pair of loops, and means fastening said loops in front of said face, said loops being adapted to receive a belt worn by said wearer.

4,164,309

DOCUMENT STORAGE AND ACCESS CASE

David K. Staats, 124 Mohawk, Clarendon Hills, Ill. 60514

Continuation-in-part of Ser. No. 595,487, Jul. 14, 1975, abandoned. This application Mar. 11, 1977, Ser. No. 776,718
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 R **65 Claims**



1. A document storage and access case for a plurality of groups of documents comprising:

a housing having bottom wall means, sidewall means an an open top;

a plurality of inclined ramp means extending forwardly up from said bottom wall means at a shallow angle relative thereto, each of said ramp means being adapted to support a group of documents thereon;

document support means cooperating with at least one of said ramp means for supporting groups of rearwardly leaning documents resting on said ramp means, the angle of said ramp means permitting each document of a group to be supported with one edge resting thereon in a position so that when the documents within each group are of uniform height dimension the top edge of selected document in the group is higher than the documents disposed rearwardly thereof permitting each said selected document to be individually gripped and tilted to a stable forwardly leaning position to provide access to the remaining documents of the group; means for supporting said selected documents in said stable forwardly leaning position.

4,164,310

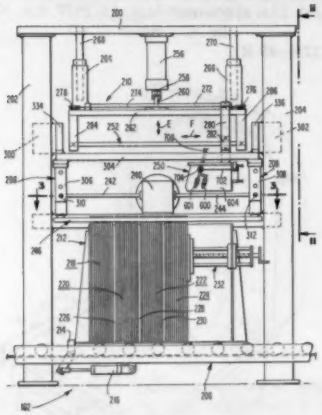
SYSTEM, APPARATUS AND METHOD FOR ASSEMBLING INDUSTRIAL LEAD-ACID STORAGE BATTERIES

Hector L. Di Giacomo, Lafayette Hill, and John A. Sacco, Wernersville, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Division of Ser. No. 695,858, Jun. 14, 1976, Pat. No. 4,074,423, which is a continuation-in-part of Ser. No. 652,715, Jan. 27, 1976, abandoned. This application Oct. 13, 1977, Ser. No. 841,743
Int. Cl.[2] B23K *1/12*
U.S. Cl. 228—58 **9 Claims**

1. In an industrial battery assembly system, said system including a burning station for forming battery straps, an improvement wherein said burning station includes comb means for selectively forming a molding cavity around at least a portion of the lugs and terminal posts to be fused, said comb means further comprising a plurality of uniformly spaced fingers adapted to extend between the spaces formed between

adjacent lugs, said comb means further providing a plurality of interchangeable template means recessed in said comb means, said template means having appropriately spaced projections



thereon for overlaying a plurality of said fingers, whereby said projection means define said molding cavity to comprise a preselected number of lugs to be welded into said strap.

4,164,311

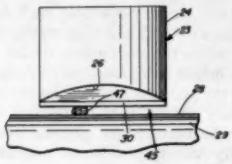
METHOD FOR WELDING A METAL COUPLING TO A TUBE

Calvin C. Swisher, Sr., Genesee Depot, Wis., assignor to Wisconsin Centrifugal, Inc., Waukesha, Wis.

Division of Ser. No. 779,286, Mar. 18, 1977, Pat. No. 4,115,019. This application May 25, 1978, Ser. No. 909,541

Int. Cl.[2] B23K *9/00, 28/02*

U.S. Cl. 228—161 **13 Claims**



1. The method of welding to the external surface of a metal pipe or tube having a longitudinal axis, a metallic attachment which includes a metal body having a beveled base providing a weld surface area and having a divider portion depending therefrom and extending thereacross and dividing the said weld surface area of the said beveled base into first and second component weld surface areas on opposite sides of the said divider portion, the said method comprising the steps of

(a) positioning the said metallic attachment at a preselected point on the said external peripheral surface of the said metal pipe or tube to which it is to be welded with the longitudinal axis of the said metallic pipe or tube disposed in a generally horizontal plane and with the said metallic attachment extending upwardly in a generally vertical orientation from the said external peripheral wall surface of the said metal pipe or tube and with the said divider portion extending generally parallel to the said longitudinal axis of the said metal pipe or tube;

(b) preliminarily or tack-welding the said metal body at the said divider portion to the said external peripheral wall surface of the said metal pipe or tube;

(c) rotating the said metal pipe or tube with the said metallic attachment preliminarily welded thereto through an arc of rotation to position the said first component weld surface area of the said beveled base of the said metallic attachment upwardly and in a generally vertical plane and with the said divider portion extending in a generally horizontal plane and parallel to the said longitudinal axis of the said metal pipe or tube;

(d) depositing a first increment of weld metal between the said first component weld surface area of the said beveled base and the said external peripheral wall surface of the said metal pipe or tube with the said divider portion extending parallel to the longitudinal axis of the said metal pipe or tube and in a generally horizontal plane;

(e) rotating the said metal pipe or tube with the said metallic attachment thus partially welded thereto through an arc of rotation to position the said metallic attachment with the said second component weld surface area of the said beveled base thereof extending upwardly in a generally vertical plane and with the said divider portion extending in a generally horizontal plane and parallel to the said longitudinal axis of the said metal pipe or tube;

(f) depositing a first increment of additional weld metal to the said second component weld surface area of the said beveled base of the said metallic attachment and to the said external surface of the said metal pipe or tube;

(g) rotating the said metal pipe or tube with the said metallic attachment thus partially welded thereto to position the said first component weld surface area upwardly in a generallY vertical plane;

(h) applying additional weld metal to the said first component weld surface area and to the said external peripheral wall surface of the said metal pipe or tube;

(i) rotating the said metal pipe or tube with the said metallic attachment thus partially welded thereto to position the second component weld surface area upwardly in a generally vertical plane; and

(j) applying additional weld metal in successive increments to the said second weld surface area of the said metal pipe or tube.

4,164,312

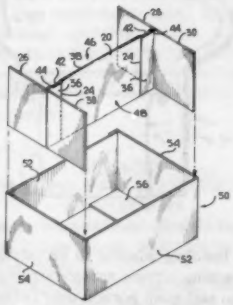
DUAL PURPOSE DIVIDER

Frederick G. Harned, Martinez, Ga., assignor to The Continental Group, Inc., New York, N.Y.

Filed May 30, 1978, Ser. No. 910,977

Int. Cl.[2] B65D *5/48*

U.S. Cl. 229—15 **7 Claims**



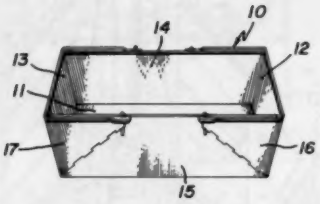
1. A new article of manufacture comprising a blank for a dual purpose divider of the type including a divider wall having at the opposite ends thereof oppositely extending end walls, said divider blank being rectangular in outline, a longitudinally extending divider line dividing said blank into similar halves; each of said halves having central panels defined by inner transverse fold lines, outer panels defined by outer trans-

verse fold lines, and a single intermediate panel between each adjacent pair of said inner and outer fold lines; said longitudinally extending divider line being in the form of a fold line between said outer transverse fold lines and in the form of cuts outwardly of said outer transverse fold lines.

4,164,313
CONTAINER

Edward G. Hewitt, Auburn, Mass., assignor to New England Envelope Manufacturing Co., Worcester, Mass.

Filed Feb. 28, 1978, Ser. No. 882,146
Int. Cl.[2] B65D *5/24*
U.S. Cl. 229—31 R **6 Claims**

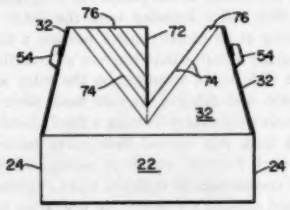


1. Container, comprising:
(a) a rectangular bottom wall,
(b) two opposed end walls, each hingedly connected to the bottom wall at an end edge thereof,
(c) two opposed side walls, each hingedly connected to the bottom wall at a side edge thereof,
(d) two gussets integrally formed with the bottom, side, and end walls from corrugated paper board, each gusset joining an end edge of one of the side walls to the adjacent end edge of one of the end walls, each gusset consisting of a first triangular portion hingedly connected to the said end edge of the end wall and lying against the outside vertical surface of the side wall and a second triangular portion hingedly connected to the said end edge of the side wall, the first and second triangular portions and side wall having upper edges that lie together with exposed vertical corrugation passages opening on the said upper edges, and
(e) a resilient U-shaped clip joining each gusset to the side wall at a position substantially spaced from the hinged connection thereto.

4,164,314
SINGLE USE DISPOSABLE CAT LITTER PACKAGE

Allen C. Edgar, Gainesville, Fla., assignor to Mid-Florida Mining Company, Lowell, Fla.

Filed May 23, 1978, Ser. No. 908,719
Int. Cl.[2] B65D *5/22*
U.S. Cl. 229—33 **4 Claims**

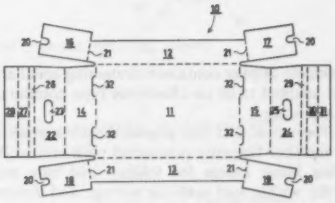


1. A disposable package formed from a paperboard blank having at least a part of one surface coated with a moisture-resistant coating made into a six-sided box for containing cat litter, said package comprising:
A. A horizontal rectangular base having four edges,
B. Two pairs of opposite vertical sides each extending upward from one edge of the horizontal rectangular base, each vertical side having two vertical side edges and a horizontal top edge.
C. Rectangular corner flaps, extending from each vertical side edge of a first pair of said opposite vertical sides, said rectangular corner flaps being folded and adhered to a second pair of said opposite vertical sides to form the box,
D. Top sections extending from the horizontal top edge of each of said vertical sides, scored to fold inwards from the vertical sides forming a horizontal top to the box parallel to said base, at least one pair of opposite top sections having abutting edges on top of the box, and wherein each top section of a first pair of opposite top sections further comprise perforations outlining a pair of tabs, and wherein a second pair of opposite top sections further comprise perforations outlining slots near the edges of said second pair of top sections, said tabs and slots being engagable one with the other, and wherein one top section of the box further comprises at least one vertical perforation and horizontal or diagonal scoring to enable a part of said top section to be folded downwards and inwards when the box is in an open position to make an adjustable-sized opening to facilitate the entry and exit of a cat,
E. Adhesive means for securing the top sections, closing the box, said adhesive means comprising a strip of adhesive paper having a pull-cord secured to the adhesive under the strip, along the length of the strip, securing said pair of opposite top sections having abutting edges on top of the box, wherein at least one of the ends of said pull-cord is unsecured and visible on the outside of the package, and
F. A flexible bag containing the cat litter.

4,164,315
BLANK FOR BOXES

Paavo Pennanen, Inkeroinen, Finland, assignor to Oy Tampella AB

Filed Jun. 8, 1978, Ser. No. 914,742
Claims priority, application Finland, Aug. 12, 1977, 773713
Int. Cl.[2] B65D *5/22*
U.S. Cl. 229—34 R **8 Claims**



1. A blank for forming a stackable box formed of cardboard, corrugated board or the like comprising:
a bottom wall forming portion having side and end edges;
a pair of side wall forming portions integrally formed with and extending from the side edges of said bottom wall forming portion, said side wall forming portions being longer than the bottom wall forming portion;
a pair of side wall extensions extending from the ends of each of said sidewall forming portions, each of said said wall extensions being joined to a respective side wall forming portion by a crease extending obliquely with respect to the side wall forming portions;
a pair of end wall forming portions integrally formed with and extending from the edges of said bottom wall forming portion, said end wall forming portions being broader than the side wall forming portions;
a pair of first end wall extensions, each extending from and integrally formed with a respective end wall forming

portion, said first end wall extensions being broader than the side wall forming portions;

a pair of second end wall extensions, each extending from and integrally formed with a respective first end wall extension; and

a pair of third end wall extensions, each extending from and integrally formed with a respective second end wall extension;

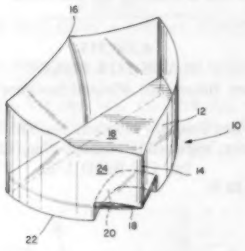
whereby said end wall forming portions are folded upwardly, said side wall extensions are folded along said oblique creases to the back of said end wall forming portions and said first end wall extensions are folded downwardly to the back of said side wall extensions thereby forming the ends of the box, said side wall forming portions, said end wall forming portions and said first end wall extensions defining upwardly extending wedgelike stacking structures, said second and third end wall extensions are folded and locked into the upwardly converging spaces formed by said end wall forming portions and said first end wall extensions thereby forming upwardly extending wedgelike stacking grooves at the end edges of the bottom wall forming portion.

4,164,316

FOLDABLE DISPLAY CONTAINER

David O. Gooding, 199 Gregory Blvd., East Norwalk, Conn. 06855

Filed Oct. 20, 1977, Ser. No. 843,837
Int. Cl.[2] B65D *5/36*
U.S. Cl. 229—41 R **7 Claims**



1. A foldable display container containing small articles, said container adapted to sit on check-out type counters, said container comprising:

a wall formed of stiff thin plastic sheet material,

a base member hingedly connected with said wall and comprising hinge means for folding said base member upwardly within said wall for storage and downwardly to form a bottom of said container,

said wall comprising pre-scored regions permitting said wall to fold substantially flat with said base member folded therewithin,

said base member being folded downwardly to form a horizontal support base with said wall conforming to the shape of said base member,

support rib means integrally formed of said wall and formed in the lower front portion thereof being separable from the front wall to extend across the front area of said base member thereunder for the base member to rest thereon, whereby said small articles to be sold are placed in said display container,

said wall and said support rib means comprising a uniform bottom edge to sit on a flat surface of said counter,

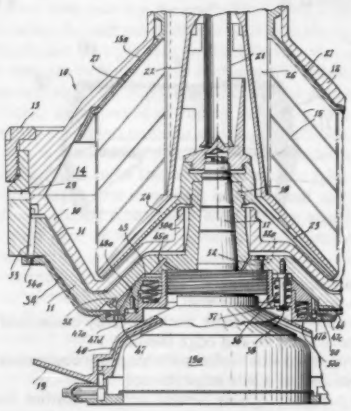
and comprising biasing means for said base member to be biased upwardly at said hinge means, so that when opened said base member rests on said support bar and the upper surface of the front edge of the base member bears against the lower edge of the wall to form a rigid container area in which said small articles are placed.

4,164,317

CENTRIFUGE WITH AUTOMATIC SLUDGE DISCHARGE

Kurt Nelson, Pleasant Valley, N.Y., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,212
Int. Cl.[2] B04B *1/18*
U.S. Cl. 233—20 A **6 Claims**

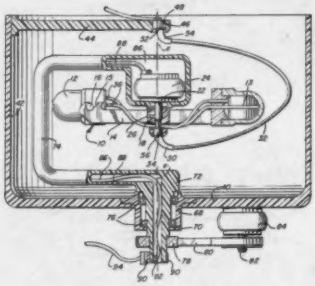


1. A sludge centrifuge comprising a hollow rotor mounted for rotation about an axis and having a separating space provided with an inlet for a sludge-containing liquid and with an outlet for separated liquid, the rotor also having a peripheral outlet for discharge of sludge separated in said space, a piston valve located in the rotor and movable axially thereof to open and close the sludge outlet, said valve forming with the rotor a closing chamber having at its radially outer portion a normally closed drain opening for an operating liquid, means for supplying operating liquid to said closing chamber to substantially fill the same when said drain opening is closed, whereby the operating liquid holds the piston valve in position to close the sludge outlet, a main slide valve biased to a normal position for closing said drain opening but movable axially of the rotor to a second position for opening said drain opening, thereby causing axial movement of the piston valve to open the sludge outlet, said slide valve forming with the rotor an opening chamber having at its radially outer portion a drain passage and at its radially intermediate portion an overflow passage, and a second slide valve mounted on the rotor and movable relative thereto and relative to said main slide, valve said second and main slide valves forming a third chamber to which said passages lead, said second slide valve having a normal position in which it closes said drain passage while said overflow passage communicates with the third chamber, the rotor forming a third passage for supplying operating liquid to said opening chamber to force the main slide valve to its said second position, said overflow passage being positioned to supply overflow liquid from said opening chamber to said third chamber to displace the second slide valve from its said normal position and thereby open said drain passage, whereby operating liquid is drained from said opening chamber and the main slide valve is returned to its said normal position.

4,164,318
CENTRIFUGAL PROCESSING APPARATUS WITH REDUCED-LOAD TUBING

Daniel R. Boggs, Vernon Hills, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 12, 1977, Ser. No. 841,288
Int. Cl.[2] B04B *5/02*
U.S. Cl. 233—26 **5 Claims**

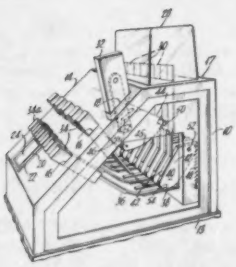


1. Centrifugal processing apparatus, including:
a stationary base;
a processing chamber rotatably mounted with respect to said base for rotation about a predetermined axis;
a flexible umbilical cable segment for establishing communication with said processing chamber, one end of said cable segment being fixed with respect to said base substantially along said axis at one side of the processing chamber, the other end of the cable segment being attached substantially on said axis in rotationally locked engagement to the processing chamber, the improvement comprising, in combination:
said cable segment comprising flexible tubing which defines a plurality of parallel longitudinal channels, and
said cable segment having a first cross-sectional area dimension adjacent both ends thereof and a second cross-sectional area dimension in the central portion thereof, said second cross-sectional area dimension being smaller than said first cross-sectional area dimension with the corresponding dimensions within the cross-sectional planes of said first and second cross-sectional areas being in substantial proportion to each other.

4,164,319
TOY CASH REGISTER

Ira Wallach, New York, N.Y., assignor to Durham Industries, Inc., New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,346
Int. Cl.[2] G06C *27/00*
U.S. Cl. 235—1 E **8 Claims**

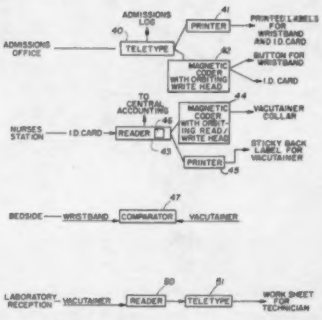


1. A toy cash register for displaying sales amount indicia comprising a cash register frame, a display panel defining panel amount openings and a panel charging opening, indicia legs extending through said panel amount openings and including upper and lower leg portions, hold pawls upwardly extending from each of said lower leg portions, a display indicia arm for each of said legs with each arm defining an indicia of an amount corresponding to indicia on the corresponding indicia leg and displayed through its said panel amount opening, a charging button extending through said panel charging opening, a rotatable charging cam pivoted on said frame and movable by motion of said charging button, a plurality of rotatable holding cams each defining a cam opening for mating with one of said hold pawls and a spring biasing each of said holding cams in a clockwise rotation all constructed and arranged whereby depression of the upper portion of one of said indicia legs releases its said lower portion by lowering its pawl from its corresponding said cam opening and said spring causes clockwise rotation of said holding cam, each of said display indicia arms contacting one of said holding cams so that a clockwise rotation of a holding cam lifts one of said arms to display an indicia of an amount corresponding to indicia on the corresponding, depressed indicia leg.

4,164,320
PATIENT AND SPECIMEN IDENTIFICATION MEANS AND SYSTEM EMPLOYING SAME

Carlos A. Irazoqui, New York, and Emil A. Scordato, Bronxville, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Continuation of Ser. No. 509,413, Sep. 26, 1974, abandoned. This application Jul. 28, 1976, Ser. No. 709,321
Int. Cl.[2] G06F *15/20;* **G06K** *5/00, 7/08, 19/06*
U.S. Cl. 235—375 **8 Claims**



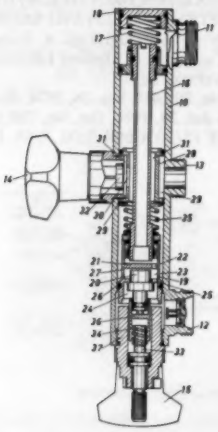
1. In a patient-container correlation system in which a patient is provided with identification means having machine readable data identifying the patient thereon and containers for receiving samples from the patient or for holding drugs or the like to be administered to the patient are provided with means attached thereto for receiving machine readable data identifying the patient, the combination comprising: patient identification card means for delivery to a patient service ordering station, said card means having a magnetizable coating thereon disposed on a flat surface so that patient identification data can be coded thereon along an annular track; a wristband member for attachment to a patient, said member having a magnetizable coating thereon disposed on a flat surface so that patient identification data can be coded thereon along an annular track; coding mechanism means having an orbiting magnetic writing head for coding machine readable patient identification data onto said patient identification card means and onto said wristband member, and means associated with said coding mecha-

nism means for printing man readable labels for attachment to said patient identification card means; data receiving means to be attached to a patient related item, said means having a magnetizable coating thereon disposed on a flat surface so that machine readable patient identification data can be coded thereon along an annular track; magnetic read/write means for a patient service ordering station having orbiting magnetic head means for reading patient identification coded data from said patient identification card means and writing said coded data onto said data receiving means, and means associated with said magnetic read/write means for printing man readable labels for attachment to said data means; and comparator means for comparing patient identification data coded onto said data receiving means with patient identification data coded on said wristband member.

4,164,321
THERMOSTATIC MIXING VALVE FOR TWO FLUIDS

Voldemar Rils, Vårgårda, Sweden, assignor to AB Vårgårda Armaturfabrik, Sweden

Filed Nov. 23, 1977, Ser. No. 854,202
Int. Cl.[2] G05D *23/13*
U.S. Cl. 236—12 R **6 Claims**

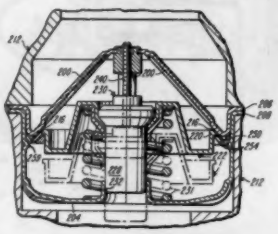


1. A thermostatic mixing valve for two liquids, e.g. hot and cold water, and comprising an elongated housing provided with an outlet and an inlet each for the liquids, at which a first control knob is arranged for adjustment of the outflow of mixed liquid and a second control knob is arranged for adjustment of the temperature of the mixed liquid by means of a temperature responsive element placed at a control member in such a way that a change of the extension length of the temperature responsive element causes an axial displacement of the control member in the housing and thus causes a changed ratio between the inflow areas of the two liquids, at which one of the liquids is supplied to the control member through a tubular feed pipe centrally placed in the housing, wherein said control member is displaceably mounted around the end of the feed pipe remote from the inlet and the control member comprises a sleeve member axially displaceable in the housing and provided with a partition wall between the outlet of the feed pipe and the temperature responsive element, the partition wall limiting the flow of liquid from the outlet of the feed pipe in response to a sensed increase in temperature of the mixed liquid by the temperature responsive element, a number of small apertures for the first liquid flowing to the control member being arranged in said partition wall, at which the first liquid is mixed with the second liquid in front of and/or around the temperature responsive element.

4,164,322
THERMOSTATIC VALVE DEVICE HAVING NON-LINEAR FLOW CHARACTERISTICS

Backman Wong, Wayland, and Earl L. Wilson, Wellesley, both of Mass., assignors to Standard-Thomson Corporation, Waltham, Mass.

Division of Ser. No. 587,915, Jun. 18, 1975, Pat. No. 4,053,105, which is a continuation-in-part of Ser. No. 384,519, Aug. 1, 1973, Pat. No. 3,893,618. This application Sep. 22, 1977, Ser. No. 835,652
Int. Cl.[2] G05D *23/02*
U.S. Cl. 236—34.5 **4 Claims**



1. A thermally responsive fluid flow control valve device for elimination of temperature fluctuations in the fluid in an internal combustion engine cooling system during initial valve opening operation comprising:

a stationary valve member having an annular valve seat portion forming a fluid port and an inclined wall surface leading from the annular valve seat portion, a part of the inclined wall surface having a notch therein for fluid flow therethrough, the notch having a smaller dimension part adjacent the valve seat portion and a greater dimension part spaced from the valve seat portion,

a movable valve member having a closure portion engageable with the annular valve seat portion to close the fluid port, the movable valve member being movable toward and away from the valve seat portion of the stationary valve member, the movable valve member closing the notch when the closure portion thereof is in engagement with the valve seat portion, initial movement of the movable valve member in a direction from the valve seat portion opening the smaller dimension part of the notch and creating a small fluid flow passage in the smaller dimension part of the notch to meter the fluid flow, and increased movement of the movable valve member in a direction from the valve seat portion opening the greater dimension part of the notch and creating a greater fluid flow passage in the notch, increased movement of the movable valve member in a direction from the valve seat portion creating an annular fluid flow passage between the movable valve member and the annular valve seat portion of the stationary valve member for fluid flow therethrough,

thermally responsive actuator means,

means joining the thermally responsive actuator means to the movable valve member for movement thereof in accordance with the temperature sensed by the thermally responsive actuator means.

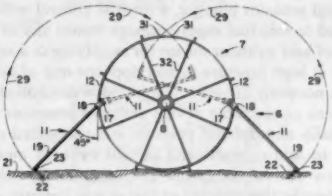
4,164,323
BRACING ATTACHMENT FOR WHEELED SPRINKLER SYSTEM

Manuel Ellison, Star Route, Milford, Calif. 96121

Filed Jul. 8, 1977, Ser. No. 814,265
Int. Cl.[2] B05B *15/06*
U.S. Cl. 239—212 **2 Claims**

1. A bracing attachment for an agricultural sprinkler system including a water pipe and a ground-supported wheel mounted thereon, said attachment comprising:

a pair of arms pivotally mounted at one end on the periphery of the wheel 180° apart on axes substantially parallel to the wheel axis, each of said arms including a tube extending from said one end to the other end a distance less than the diameter of the wheel and such that each of said arms



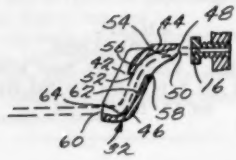
subtends approximately a 45° angle with the vertical when said one ends of said arms are in a horizontal plane and said arms extend toward the ground, each of said arms further including a pair of spikes mounted on said other end capable of penetrating the ground under foot pressure exerted on said other end.

4,164,324

SPRINKLER HEAD WITH IMPROVED INTEGRAL IMPACT ARM AND ANTI-BACKSPLASH DRIVE SPOON

Kenneth J. Bruninga, Mapleton, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed Feb. 22, 1978, Ser. No. 880,275
Int. Cl.[2] B05B 3/14
U.S. Cl. 239—230 **10 Claims**



1. A part-circle step-by-step rotary sprinkler head comprising:

a sprinkler body including an inlet and an outlet having a longitudinal axis,

means adapted to be fixedly secured in communicating relation with a source of water under pressure mounting said sprinkler body for rotational movement about a generally vertical axis with the longitudinal axis of said outlet extending upwardly and outwardly at an angle with respect to the axis of rotation and said inlet in communicating relation to the source of water under pressure so that the latter will issue as a stream along the longitudinal axis of said outlet,

impact arm means mounted on said sprinkler body for oscillating movement toward and away from an impact limiting position,

said impact arm means having a drive spoon thereon engageable with the stream when said impact arm means is near and in said impact limiting position operable in response to the engagement of the stream therewith to move said impact arm means in a direction away from said impact limiting position and to direct the portion of the stream engaged thereby in a direction generally parallel with the longitudinal axis of said outlet,

means for biasing said impact arm means in a direction toward said limiting position so as to move the same in said direction through an impact stroke following the movement of said impact arm means in the opposite direction under the operation of said drive spoon to thereby effect a step-by-step rotary movement of said sprinkler body in one direction, and

means operable when said sprinkler body reaches a first predetermined position of rotational movement for causing the movement of said impact arm means in a direction away from said impact limiting position to effect a rapid step-by-step rotary movement of said sprinkler body in the opposite direction until the latter reaches a second predetermined position of rotational movement,

the improvement which comprises said drive spoon being integrally formed as a part of said impact arm means and having a construction related to the longitudinal axis of said outlet when said impact arm means is in said impact limiting position which comprises upper and lower walls in a position to receive said stream therebetween, an initial stream engaging wall extending between said upper and lower walls and a final stream engaging wall extending between said upper and lower walls spaced with respect to said initial stream engaging wall in a position (1) with all portions thereof disposed outwardly of all portions of said initial wall in a transverse direction corresponding to the direction of movement of said spoon away from said impact position, (2) with a longitudinally inward portion thereof disposed in longitudinally lapped relation with a longitudinally outward portion of said initial wall and (3) with a longitudinally outward portion thereof disposed longitudinally outwardly of the longitudinally outward portion of said initial wall,

said initial stream engaging wall having an initial leading edge disposed within said stream, an initial terminal edge spaced longitudinally and transversely outwardly therefrom and a pull-in water contacting surface extending between said initial leading and terminal edges including an initial stream receiving portion extending generally longitudinally outwardly from said initial leading edge with a slight transversely outward extent and a transversely outwardly directing stream portion extending from said initial stream receiving portion in a generally concavely arcuate configuration,

said final wall including a final leading edge disposed longitudinally between said initial leading and terminal edges and transversely outwardly from said initial leading edge a distance at least as great as the distance said initial terminal edge is transversely outwardly spaced therefrom, a final terminal edge spaced longitudinally and transversely outwardly from said final leading edge, and a reactant water contacting surface extending between said final leading and terminal edges including a final stream receiving portion extending generally transversely outwardly from said final leading edge with a slight longitudinally outward extent and a longitudinally outwardly directing stream portion extending from said final stream receiving portion in a generally concavely arcuate configuration,

the reactant water contacting surface of said final wall being disposed substantially entirely transversely outwardly of a plane passing through the leading edges of said initial and final walls.

4,164,325

HIGH-PRESSURE-ROTARY-NOZZLE APPARATUS

John D. Watson, 906 E. Harmony La., Fullerton, Calif. 92631

Filed Nov. 21, 1977, Ser. No. 853,254
Int. Cl.[2] B05B 3/06
U.S. Cl. 239—252 **9 Claims**

1. A high-pressure rotary-nozzle apparatus comprising:

a central support shaft having a central passage with an open end and a closed end, including a plurality of radially disposed passages adjacent said closed end through which fluid is passed under high pressure from a hose affixed to said open end thereof, said shaft having an enlarged boss member formed thereon;

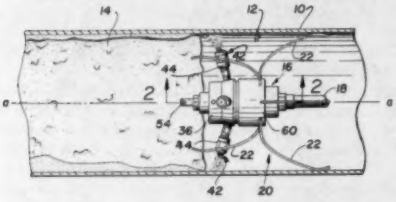
a main rotor body having a longitudinal bore including a central cavity disposed so as to allow said radial passages

to be located in said cavity, said body including a plurality of radial discharge ports, said discharge ports being angularly canted relative to the longitudinal axis of said body;

bearing means positioned at each end of said rotor body to provide free rotation thereof about said shaft;

means for securing said bearing means and said rotor body for rotational movement on said shaft;

means for controlling the rotational speed of said body, said means being mounted between said body and said shaft;



guide means to coaxially position said apparatus along the longitudinal axis of a pipe; and

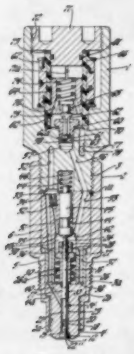
spray-nozzle means mounted to said discharge ports so as to extend radially and outwardly from said rotor body, whereby said fluid is directed against the wall of said pipe to dislodge foreign debris therefrom as said spray-nozzle means is rotated with said rotor body.

4,164,326

ELECTROMAGNETIC FUEL INJECTOR NOZZLE ASSEMBLY

John I. Deckard, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 6, 1978, Ser. No. 894,099
Int. Cl.[2] F02M *41/16*
U.S. Cl. 239—585 **3 Claims**



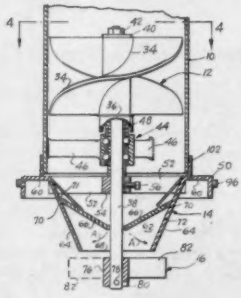
1. An electromagnetic fuel injector nozzle assembly including a housing means with a cylinder means therein and an axial bore passage interconnected at one end with said cylinder means and terminating at its opposite end at a spray outlet port at one end of said housing means, a poppet valve positioned in said bore passage for movement between a closed position and an open position relative to said spray outlet port for controlling fuel injection therefrom, an actuator plunger reciprocably journaled in said cylinder means in position to abut against one end of said poppet valve, a first spring means positioned in one end of said cylinder means to normally bias said actuator plunger into abutment with said poppet valve, a second spring means positioned in the opposite end of said cylinder means and operatively connected to said poppet valve for normally biasing said poppet valve to said closed position against the force of said first spring means, fuel supply passage means operatively connectable at one end to a source of high pressure fuel and connected in flow communication with said bore passage whereby to supply fuel for flow out through said spray outlet port, the fuel supply passage means also being in fluid flow communication with said one end of said cylinder means for continually supplying high pressure fuel against said one end of said actuator plunger, a throttle control orifice passage connected to said fuel supply passage means and to said opposite end of said cylinder means for supplying at a control flow rate fuel at high pressure to said opposite end of said cylinder means, a normally closed solenoid valve controlled drain passage means connectable at one end to a reservoir for fuel at substantially atmospheric pressure and connected at its opposite end to said opposite end of said cylinder means for the drain flow of fuel therefrom as controlled by said solenoid valve whereby the pressure of fuel in said opposite end of said cylinder means can be modulated between a low pressure and a high pressure to thereby vary the differential pressure across said actuator plunger between a high differential pressure when said solenoid valve is energized so as to effect movement of said actuator plunger in a direction to move said poppet valve to said open position and, a low differential pressure when said solenoid valve is de-energized whereby to provide a substantial force balance across said actuator plunger so that said second spring means is operative to move said poppet valve to said closed position.

4,164,327

GRAIN SPREADER

Donald Y. Clark, Rte. 1, Central City, Nebr. 68826

Filed Apr. 7, 1978, Ser. No. 894,391
Int. Cl.[2] B65G *65/32*
U.S. Cl. 239—669 **17 Claims**



1. A grain spreader comprising, a hopper having a grain inlet and a grain outlet, a power driven auger mounted within the hopper for spreading incoming grain evenly and for propelling the grain toward the outlet, a discharge chute rotatably mounted next to the hopper outlet, said chute having a grain entrance end and a grain exit end and including at least one spring pressed closure plate normally tending to prevent passage of grain through the chute, an axle for said chute, motor means for driving said chute and axle, and a thrower member mounted on said axle adjacent the exit end of the chute, whereby pressure of grain movement caused by rotation of the auger will cause said closure plate to open, allowing grain to pass uniformly through the hopper and discharge chute and to be spread evenly by the chute and the thrower member.

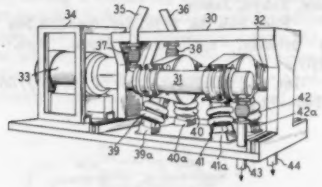
4,164,328
VIBRATORY BALL OR TUBE MILL

Ernst Kausel, Lima, Peru, and Helmut Haas, Cologne, Fed. Rep. of Germany, assignors to Klöckner Humboldt Deutz Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 702,056, Jul. 2, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,249

Int. Cl.[2] **B02C** *17/14*

U.S. Cl. 241—175 **2 Claims**



1. A vibrating ball or tube mill which pulverizes a continuous flow of crushable material, said mill comprising:

a base,

at least one grinding tube,

a mounting means for mounting said grinding tube,

drive means for eccentrically driving said grinding tube,

four selectively pressurizable inflatable bellows each attached to and extending upwardly and inwardly from said base to said mounting means, each said bellows having a central axis,

said bellows being inclined with respect to each other such that their central axes intersect an apex above a central portion of said mill,

said bellows stressed in both the axial and transverse directions, said mill in operation generating an oscillation radius greater than 15 mm; and

a means for selectively adjusting the pressure within each of the bellows, such that the height of each of the bellows above the base may be selectively individually varied to adjust the position of the mounting means and the grinding tube mounted thereon.

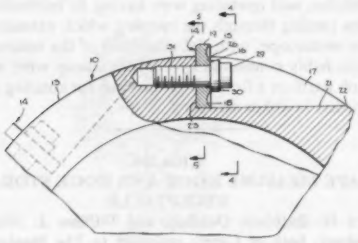
4,164,329
CHIPPER ROLLER AND KNIVES THEREFOR

Philip J. Higby, Towaco, N.J., assignor to Lee Heydenreich, Essex Fells, N.J.

Continuation of Ser. No. 747,218, Dec. 3, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,534

Int. Cl.[2] **B02C** *18/06, 18/18*

U.S. Cl. 241—294 **7 Claims**



1. A chipper roller, for use in a two-stage machine for granulating bodies of plastic and like material, having a cylindrical surface from which projects an axially and circumferentially spaced array of replaceable knives, characterized in that each of said knives consists of a circular disc having a cutting edge on one side at its periphery and a circumferential groove in said one side adjacent said cutting edge providing a rake at an angle greater than 40° which cooperates with the walls of said groove such that said knives cut curls from said bodies of material, the cross-section of said groove having a smoothly curving contour free from slope discontinuities and reversals, and said discs are each removably mounted in respective recesses on said roller with a portion of said disc projecting beyond said surface and with said one side of said disc facing at least generally in the direction of intended rotation of said roller.

4,164,330
DEVICE FOR TRANSFERRING A THREAD TO AN UNWOUND COIL CORE

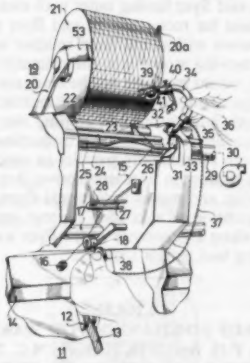
Wilhelm Maassen; Hans Raasch, and Heinz-Georg Wassenhoven, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,492

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657798

Int. Cl.[2] **B65H** *54/02, 65/00*

U.S. Cl. 242—18 PW **7 Claims**



1. Device for transferring to an empty coil core a thread continuously fed to the take-up coil of a rotor spinning machine, comprising a thread guide traversible along a reciprocating path between the ends of a coil core for guiding a thread onto the coil core, a thread pickup assembly having means for picking up the thread under tension before transfer thereof to an empty coil core, said thread pickup assembly being pivotable from a first location on said reciprocating path to a second location at one of the ends of the coil core, said thread pickup assembly comprising a thread capturing device as well as a pair of thread severing devices respectively disposed in front of and behind said pickup means in travel direction of the thread, said thread severing devices being activatable in time sequence by movement of said thread pickup assembly so that in said first location thereof said thread severing device disposed behind said pickup means is activatable, after capture of the thread by said capturing device, in time coordination with the pickup of the thread, and at said second location of said thread pickup assembly said thread severing device disposed in front of said pickup means is activatable at an instant within the period during and shortly after transfer of the thread to the empty coil core.

4,164,331

SLIDE GUIDE DEVICE FOR MOVING WIRE AND THE LIKE

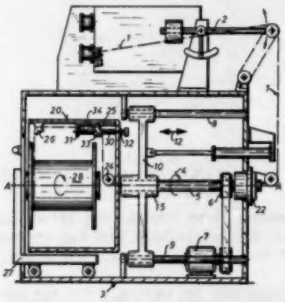
Werner Henrich, Hörbach, Fed. Rep. of Germany, assignor to Firma Henrich KG, Hörbach, Fed. Rep. of Germany

Filed Feb. 2, 1977, Ser. No. 764,843

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2604012

Int. Cl.[2] B65H *54/02, 57/04*

U.S. Cl. 242—25 R **14 Claims**



1. An apparatus for winding at a high speed a strand such as wire and the like upon a spool comprising means for supporting therein a spool upon which a strand is to be wound, a rotatably mounted flyer movable around the spool to wind the strand therein, said flyer having outer wall means surrounding said spool, means for reciprocating said flyer relative to said spool, guide means within and fixed relative to said flyer for introducing a moving strand into the rotatable flyer along its axis of rotation, means mounted on the inner surface of the wall means of the flyer and spaced from the axis of rotation of the flyer for slidingly supporting and guiding the strand moving within the rotatable flyer from its introduction at the axis of rotation to a path substantially parallel to said axis, said slide support means having an arcuate groove therein to define a path for the wire, and means within said flyer for selectively adjusting the position of said slide support means relative to said flyer and along a generatrix of the flyer so that the arc of the strand along said path is variable.

4,164,332

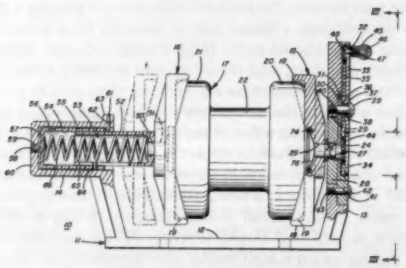
LINE WIND-UP MECHANISM FOR MARKER BUOYS

Paul H. Insch, P.O. Box 2818, Hickory, N.C. 28601

Filed Jul. 11, 1978, Ser. No. 923,541

Int. Cl.[2] B65H *75/00*

U.S. Cl. 242—54 R **8 Claims**



1. A line wind-up mechanism for fisherman's marker buoys comprising a support frame having two coaxially spaced pedestals, a pair of holding cups rotarily mounted on said pedestals respectively for holding a marker buoy therebetween for rotation coaxially with said cups, speed-amplifying gear mechanism comprising an annular driving gear wheel having internal teeth therein and a pinion gear engaging said internal teeth and driven thereby, said pinion gear being connected to one of said cups, and means for manually rotating said annular driving gear wheel.

4,164,333

ENDOSCOPE FILM FEEDING DEVICE

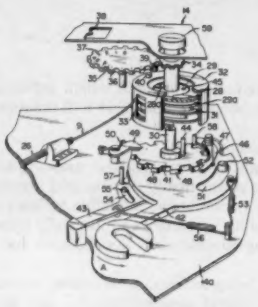
Kiyokazu Hosaka, Tami, Japan, assignor to Olympus Optical Company, Tokyo, Japan

Filed Feb. 23, 1978, Ser. No. 880,346

Claims priority, application Japan, Feb. 28, 1977, 52/23761[U]

Int. Cl.[2] G03B *1/04, 15/14*; A61B *1/06*

U.S. Cl. 242—71.2 **4 Claims**



1. A film feeding device used in an endoscope for pulling a film takeup wire wound around a film takeup pulley of a film cassette placed in a distal end of the endoscope comprising:

a shaft rotatably mounted on a body of an operation section of the endoscope;

a generally frustoconical drum portion fixedly mounted on the shaft;

a helical blade member formed on an outer periphery of the drum portion;

a casing covering the drum portion and having an inner surface complementary to a shape defined by the outer periphery of the blade member, said casing having an axially elongated opening formed in a lateral wall thereof;

an operating wire connected at one end to the larger diameter end of the drum portion and that portion succeeding to said one end which is engaged with a groove defined by the outer periphery of the drum portion and the blade member, said operating wire having an intermediate portion passing through the opening which extends through the endoscope, with the other end of the operating wire detachably connected by the film takeup wire; and

a knob fixed on a free end of the shaft for rotating the drum portion in either direction.

4,164,334

TAPE MEASURE HOOK AND HOOK STORAGE RECEPTACLE

Richard H. Rathbun, Oakdale, and William J. Hildebrandt, Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

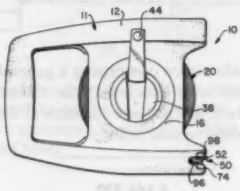
Filed Jan. 16, 1978, Ser. No. 869,841

Int. Cl.[2] G01B *3/10*

U.S. Cl. 242—84.8 **8 Claims**

1. In a tape measure having a molded plastic casing with separate casing sides with opposed laterally spaced sidewalls respectively, providing a measuring tape storage compartment therebetween and an edgewall extending at least partly around the edge of the spaced sidewalls to at least partly enclose the

measuring tape storage compartment, a rotatable measuring tape reel extending between the spaced sidewalls for storing a coiled measuring tape blade within the storage compartment, an elongated measuring tape blade adapted to be manually withdrawn from the casing and having an inner end connected to the reel for coiling the tape blade onto the reel by rotation of the reel in one angular direction, and an enlarged measuring tape end grip at the outer end of the measuring tape blade, the tape measure having a measuring tape blade delivery throat with an outer opening in the casing edgewall for delivering the measuring tape blade to and withdrawing it from the reel, the improvement wherein the tape delivery throat comprises opposed laterally spaced elongated channels in the opposed sidewalls respectively, extending inwardly from said outer throat



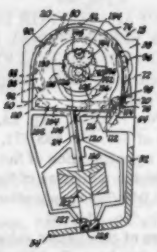
opening and forming a storage receptacle for slidably receiving the enlarged end grip laterally between the sidewalls of the casing and inwardly of said outer opening, the opposed channels being inclined inwardly laterally toward each other to define an end grip receptacle of laterally decreasing width and the enlarged end grip having an inwardly laterally decreasing width generally conforming to the inwardly decreasing width of the storage receptacle, the opposed sidewalls having laterally spaced outwardly facing abutment shoulders at the inner ends of the opposed channels respectively and the enlarged end grip having at the inner end thereof laterally spaced inwardly facing abutment shoulders laterally outwardly of the measuring tape engageable with the outwardly facing abutment shoulder of the casing respectively for seating the enlarged end grip in the storage receptacle.

4,164,335

AUTOMATIC LOCKING RETRACTOR WITH LOCK-UP DELAY

Joseph D. Kondziola, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1978, Ser. No. 896,982
Int. Cl.[2] B65H *75/48*; A32B *35/02*
U.S. Cl. 242—107.4 A **3 Claims**



1. In a vehicle seat belt retractor having a rotatable reel for winding and unwinding a belt, spring means biasing the reel in the belt winding direction, a pawl, ratchet means on the reel engageable by the pawl, said pawl being selectively movable between a position disengaged from the ratchet means to permit belt unwinding and an engaged position locking the belt against belt unwinding rotation, the improvement comprising:

spring means biasing the pawl to the engaged position;

a toggle linkage having an extended position of engagement with the pawl to block engagement of the pawl with the reel and a collapsed position to unblock the pawl for movement to the reel engaging position;

means responsive to rotation of the reel and adapted to establish and maintain the toggle linkage in the extended position when the belt is in a fully wound condition and permit movement of the toggle linkage to the collapsed position when the belt is unwound from the fully wound position;

means responsive to a sensed condition of vehicle acceleration or attitude for moving the toggle linkage to the collapsed position to unblock the pawl for movement to the reel engaging position;

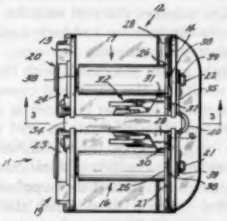
a control disc clutched to the reel for limited rotation therewith and carrying an abutment rotating to a blocking position in alignment with the pawl in response to unwinding rotation of the reel to block movement of the pawl to the engaged position when the responsive means moves the toggle linkage to the collapsed position unblocking the pawl prior to initiation of winding rotation of the reel carrying the control disc abutment to an unblocking position allowing pawl movement to the reel engaging position.

4,164,336

DUAL SPOOL POSITIVE DRIVE RETRACTOR

Wallace C. Higbee, Romeo, and Robert J. Rumpf, Grosse Pointe, both of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 17, 1978, Ser. No. 896,928
Int. Cl.[2] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **5 Claims**



1. A dual spool retractor structure comprising:

a frame;

a pair of spaced-apart parallel adjacent spools having seat belt webbing wound thereon and having rewind motors operably connected thereto and journalled in said frame, each said spool having ratchet flanges with ratchet teeth lockable in opposite directions of rotation;

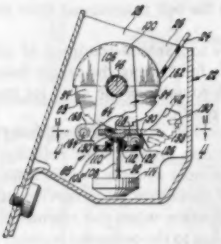
a pawl element in said frame beneath and between said spools and having a pair of extensions at one end, said extensions displaceably supported in a pair of cam openings defined in said frame, said cam openings configured for guiding lift and displacement of said pawl toward inteference engagement with said ratchet teeth; and

a sensor secured to said frame and beneath said pawl element operably contacting said pawl and selectively movable to lift said pawl guidably toward interference engagement with movable of said ratchet teeth of one of said spools.

4,164,337
SEAT BELT RETRACTOR WITH PIVOTED LOCKING MECHANISM

Hubert P. Blom, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1978, Ser. No. 887,050
Int. Cl.[2] A62B 35/02; B65H 75/48
U.S. Cl. 242—107.4 A 2 Claims



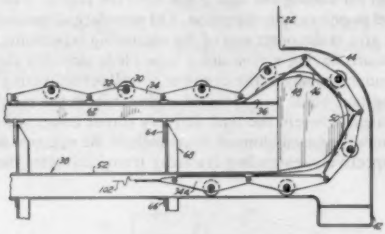
1. A motor vehicle seat belt retractor comprising:
a housing adapted for mounting on a motor vehicle;
a belt reel having a restraint belt attached thereto;
a reel shaft mounting the reel on the housing and defining an axis of reel rotation for winding and unwinding the belt;
a support member encircling the reel shaft to define an axis of support member rotation coincident with the axis of reel rotation;
bearing means interposed between the support member and the reel shaft to isolate the support member from the shaft and the reel and thereby prevent frictional transmission of a rotation inducing torque to the support member during rotation of the reel;
a lock bar pivotally mounted on the support member and having a first locking portion normally spaced from the reel and a second locking portion normally spaced from the housing;
an inertia sensing member mounted on the support member and operable under a predetermined inertia stimulus to move the lock bar to a locked condition wherein the first locking portion engages the reel and the second locking portion engages the housing to block unwinding rotation of the reel relative the housing.
and counterweight means associated with the support member adapted to situate the combined center of gravity of the support member, lock bar and inertia sensing member at a point spaced from the axis of reel rotation and to establish the magnitude of their combined mass unbalanced with respect to the axis of rotation so that gravitational force causes rotation of the support member about the axis of reel rotation to establish the inertia sensing member in a precise operative orientation wherein a predictable sensitivity of inertia stimulus is obtained irrespective of the mounting orientation of the housing relative the axis of reel rotation.

4,164,338
FLEXIBLE RAIL ROLLER SYSTEM

Clayton E. Myron, Seattle, Wash., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed Feb. 23, 1978, Ser. No. 880,659
Int. Cl.[2] B64C 1/20; B64D 9/00
U.S. Cl. 244—118 R 8 Claims

8. In an aircraft, an elongated cargo carrying space having a deck, an elongated flexible roller construction comprising flexible rails, formed by pairs of laterally spaced opposed links each pivotally connected at its ends to adjacent links, roller supporting shafts extending between corresponding links in said rails, rollers on said shafts, said roller construction having an operating position in which said roller construction rests on said deck and a stowed position in which said roller construction is received in inverted position beneath said deck, and guide means of generally semi-circular cross-section adjacent one end of said deck around which said roller construction is drawn in moving between the aforesaid operating and stowed

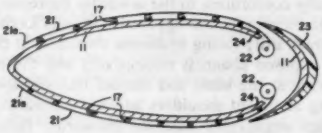


positions, said guide means comprising a generally semi-cylindrical guide surface with which only the rollers of said roller construction contact, and arcuate channels at the edges of said guide surface to receive said links.

4,164,339
ENVIRONMENTAL PROTECTION SYSTEM

Carl O. McClenny, 6154 Willer's Way, Houston, Tex. 77057

Continuation of Ser. No. 367,321, Jun. 6, 1973, abandoned. This application Nov. 25, 1977, Ser. No. 854,753
Int. Cl.[2] B64G 1/10
U.S. Cl. 244—163 4 Claims



1. An environmental protection system for protecting a spacecraft surface from a hostile environment, comprising:
a. a spacecraft exterior surface to be protected;
b. a layer of insulating material adapted to be rolled up in a compact roll when not in use; and,
c. means for deploying said insulating material between said spacecraft surface to be protected and said hostile environment.

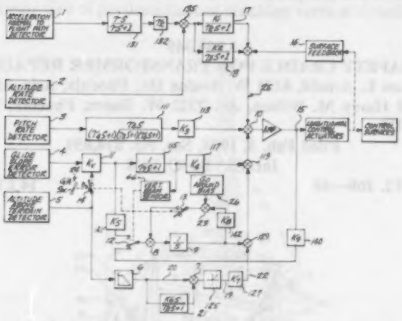
4,164,340
METHOD AND APPARATUS FOR DETERMINING WHEN A GLIDE SLOPE SIGNAL EXCEEDS A PREDETERMINED LEVEL

Robert D. Simpson, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 714,214, Aug. 13, 1976, abandoned, which is a continuation of Ser. No. 553,371, Feb. 26, 1975, Pat. No. 3,994,455, which is a continuation of Ser. No. 342,343, Mar. 19, 1973, abandoned, which is a division of Ser. No. 221,958, Jan. 31, 1972, Pat. No. 3,801,049. This application Oct. 21, 1977, Ser. No. 844,408
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.[2] G05D 1/12
U.S. Cl. 244—186 8 Claims

1. In combination in a system for detecting when a glide slope signal exceeds a predetermined level:
first means for generating a first signal representative of said glide slope signal;
second means for producing a second signal representative of the altitude of an aircraft above the terrain;

third means for combining said first and second signals to produce a third signal;



fourth means for detecting a predetermined signal level of said third signal to produce a logic level representative of a condition corresponding to said glide slope signal exceeding a predetermined level.

4,164,341

SNOWMAN MOLD

Tiney M. McComb, Rte. #3, Box 43-A, Orient, Ohio 43146

Filed Feb. 23, 1978, Ser. No. 880,597
Int. Cl.[2] B28B *7/24*
U.S. Cl. 249—126 **5 Claims**

1. A hollow mold assembly for the forming of large figures from snow comprising at least two mold sections, each of said mold sections being substantially a mirror image of the other and extending in one piece from the top of the figure to be formed to the bottom, said mold sections being mateable to form a hollow figure, said figure being formed of successively smaller substantially spherical portions, including a base portion, a body portion and a head portion, and at least three large openings formed in said mold sections for the admission and packing of snow to the entire interior of said mold, each of said openings being associated with one of said spherical portions for the easy admission of snow to each respective spherical portion.

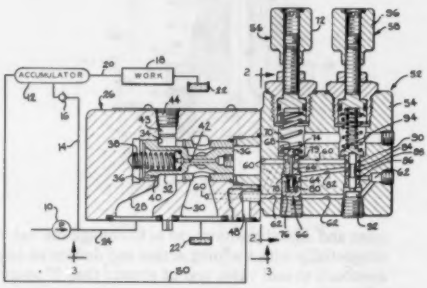
4,164,342

VARIABLE DIFFERENTIAL PRESSURE UNLOADING VALVE APPARATUS

Charles E. Johnson, Santa Ana, Calif., assignor to Double A Products Company, Manchester, Mich.

Division of Ser. No. 752,103, Dec. 20, 1976, Pat. No. 4,114,637. This application Mar. 2, 1978, Ser. No. 882,598
Int. Cl.[2] G05D *16/10*; F16K *31/122*
U.S. Cl. 251—28 **3 Claims**

1. A differential pressure control apparatus comprising a valve body having a first passageway for receiving hydraulic fluid under pressure from a primary source for discharge to tank, a normally closed first spring-actuated valve member in said first passageway spring biased to a closed position to block communication from the primary source to tank and responsive to a preselected pressure acting against its spring action to move to an open position to vent said passageway to tank, a second passageway for receiving hydraulic fluid under pressure from a pilot source, a balancing chamber adjacent to said first passageway in communication with said second passageway and containing a balancing piston operably connected to said first valve member and movable between a first position when said first valve member is closed and a second position when the piston in response to pressure from said pilot source and in cooperation with pressurized fluid from said primary source urges said first valve member to its open position, a third passageway in communication with said first passageway upstream from said first valve member and communicating



with said balancing chamber on the side of said balancing piston opposite from the communication of the balancing chamber with said second passageway, a valve chamber providing said communication between said first and said third passageways and communication between said second and said third passageways, and a second spring-actuated valve member in a first position in said valve chamber normally closing communication between said first and third passageways and allowing communication between said second and third passageways and responsive to a preselected pressure in said second passageway acting against the spring-action of said second valve member to move to a second position closing communication between said second and third passageways and allowing communication between said first and third passageways.

4,164,343

ECCENTRIC BALL TYPE VALVE

Heinz Graebner, Jeffersonville, Ind., assignor to Henry Voyt Machine Co. Inc., Louisville, Ky.

Filed Sep. 12, 1977, Ser. No. 832,167
Int. Cl.[2] F16K *5/06*
U.S. Cl. 251—315 **6 Claims**

1. A valve comprising:

A. a casing, having aligned inlet and outlet passages, a bonnet opening, at right angles to the axis of said inlet and outlet passages, a valve chamber for provision of a valve member to effect closure, an annular valve seat surrounding one of said passages;

B. a bonnet for said casing, said bonnet having a bore axially aligned parallel to the centerline of said bonnet opening;

C. a valve stem rotatably journaled in the bore of said bonnet and extending into said casing at one end and projecting out of said casing at the other;

D. packing surrounding said valve stem;

E. a spherical valve member, having a cylindrical fluid passage therethrough and mounted on said valve stem for movement between an open position in which said cylindrical fluid passage is in parallel axial alignment with said axis of said inlet and outlet passages and a closed position

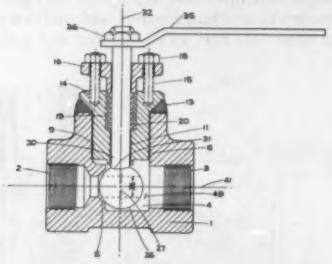
in which said cylindrical fluid passage is disposed transversely across said valve chamber, normal to said axis of said aligned inlet and outlet passages, and

F. means to rotate said valve stem;

G. said spherical valve member being mounted so that its centerline is offset relative to the centerline of said stem;

H. the improvement wherein:

1. the centerline of said bonnet opening is offset from the axis of said inlet and outlet passages, and
2. said stem is mounted so that its centerline is offset from the centerline of said bonnet, and
3. the spherical valve member moves in an arc between



open and closed positions, so as to engage the valve seat tangentially with a wiping action and defines an angle of approach to said valve seat of greater than 0° so as to be self-locking;

I. the further combination therewith of:

1. movement means including the co-action of the bore of said bonnet and the stem of said valve member responsive to the rotation of said bonnet for moving said spherical valve member in an effective straight line into seating and engagement with said seat during assembly; and
2. means for permanently securing said bonnet in fixed position.

4,164,344

HYDRAULIC CLAMPING APPARATUS

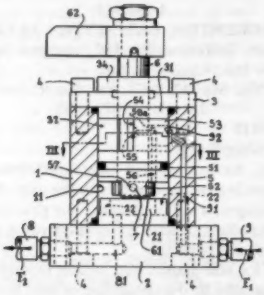
Maurice M. Deragne, 30 Rue Chaziére, Lyons, France (69004)

Filed Dec. 27, 1977, Ser. No. 864,904

Claims priority, application France, Dec. 30, 1976, 76 39850

Int. Cl.[2] B23Q *3/08*

U.S. Cl. 269—27 **7 Claims**



1. Hydraulically controlled apparatus for selectively clamping a work piece having a body; a clamping element associated with a piston movable in the body, the piston having transverse and longitudinal surfaces adapted to be subjected to hydraulic pressure causing axial and angular displacement of the piston to clamp or unclamp a said work piece; and a mechanical locking mechanism interposed between the piston and the body, the mechanism comprising dogs and recesses formed on the piston and body, mutual engagement of which locks the piston in a given angular orientation with respect to the body at one of the end points of the axial travel of the piston.

4,164,345

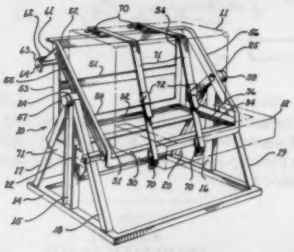
SAFETY CRADLE FOR TRANSFORMER REPAIR

William L. Arnold, 6131 W. Avalon Dr., Phoenix, Ariz. 85033, and Harry M. Wilson, Jr., 2222 W. Sierra, Phoenix, Ariz. 85029

Filed Feb. 3, 1978, Ser. No. 874,851

Int. Cl.[2] B23Q *3/18*

U.S. Cl. 269—69 **14 Claims**



1. A transformer safety cradle which comprises:

(a) first support means adapted to receive and support the base of a transformer, said means having first and second edges;

(b) second support means adapted to receive and support one surface of the transformer, said second means having first and second edges with said first edge being connected to the second edge of said first means;

(c) first and second connectors, each of said connectors being located at one side of said first and second support means and extending between regions thereon proximate to the first edge of said first means and the second edge of said second means;

(d) a frame adapted for placement on a support surface, said frame including first and second upright members spaced to receive said support means and connectors therebetween;

(e) first and second pivot means for rotatably connecting each upright member to the adjacent connector whereby said first and second support means and the transformer received thereby can rotate relative to said frame; and

(f) limit means affixed to at least one of said connectors for limiting rotation of said support means to between first and second positions, said first position corresponding to a loading position wherein the transformer is supported by said first support means and said second position corresponding to a work position wherein the transformer is supported by said second support means.

4,164,346

LAP SIDING TOOL

Jack R. Sickler, P.O. Box 20803, Billings, Mont. 59104

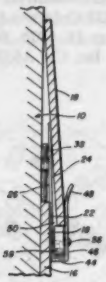
Filed May 18, 1978, Ser. No. 907,287

Int. Cl.[2] B23Q *3/02*

U.S. Cl. 269—321 S **15 Claims**

1. A tool for use in pairs to ass.st in properly positioning successive courses of siding members whereby to maintain the desired overlap of successive pairs of adjacent courses of siding members, said tool including an upstanding body having front and rear sides, the upper end portion of said body having upper downwardly facing abutment surface means spaced slightly outwardly of said rear side and the lower end portion of said body including lower upwardly facing support roller means

journalled from said body for rotation about a generally horizontal front-to-rear extending axis and with said support roller means spaced outwardly of the front side of said body, said tool being free of portions thereof blocking vertical downward



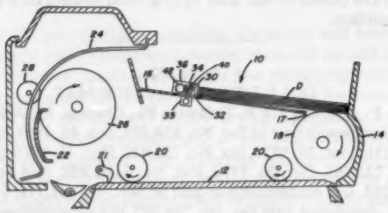
access to said roller support means from a point spaced above the uppermost extremity of said body, said abutment surface means being widely spaced on opposite sides of a vertical plane containing said axis.

4,164,347

SEPARATOR MEMBER DRIVE MECHANISM

Thomas M. McGrain, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1978, Ser. No. 880,400
Int. Cl.[2] B65H *5/22*
U.S. Cl. 271—3.1 **8 Claims**



1. In an apparatus for circulating discrete pages of a document from a document support to the platen of a copier for copying and then back to said document support, said apparatus having a rotatably mounted separator member engageable with the last page to be copied for distinguishing pages yet to be copied during a document copying cycle from those returned to said document support after copying, means for drivingly engaging said separator member, after said last page has been fed from said document support, to move said separator member toward a position overlying said last page upon return of said last page to said document support and then terminating engagement with said separator member, said means comprising:

a rotatable member mounted for coaxial rotation with said separator member;

means for initiating rotation of said rotatable member in timed relation to the feeding of said last page from said document support to the platen and terminating rotation of said rotatable member in timed relation to the feeding of said last page from the platen to said document support; and

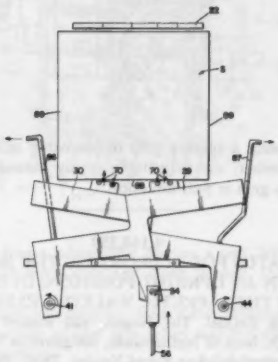
a plurality of pawls on said rotatable member mounted for movement between a first position in which the pawls are disposed to drivingly engage said separator member and a second position in which the pawls are disengaged from said separator member, one of said pawls being movable to said first position to rotate said separator member upon rotation of said rotatable member and to said second position to disengage said separator member upon the termination of rotation of said rotatable member.

4,164,348

JOGGING APPARATUS

Joseph J. Doria, Easton, Pa., assignor to Harris Corporation, Cleveland, Ohio

Filed Sep. 26, 1977, Ser. No. 836,391
Int. Cl.[2] B65H *31/38*
U.S. Cl. 271—221 **10 Claims**



10. In a sheet handling system of the type in which sheet material articles are deposited in a hopper, apparatus for jogging the sheet material articles in the hopper, said apparatus comprising a pair of first jogger members for engaging respective opposite sides of the sheet material articles, a pair of second jogger members for engaging a third side of the sheet material articles which extends between the first and second sides, a first movable support member, means for fixedly securing one of said first jogger members and one of said second jogger members to said first movable support member for movement therewith, a second movable support member, means for fixedly securing the other of said first jogger members and the other of said second jogger members to said second movable support member for movement therewith, means supporting said first and second support members for simultaneous movement in first directions to effect engagement of the said first jogger members with the respective opposite sides of said articles and in opposite second directions to move said first jogger members away from said respective opposite sides while effecting movement of said second jogger members into engagement with said third side of said sheet material articles, and an actuator member connected to said first and second support members to effect said movement of said first and second support members in said first directions and then in said second directions.

4,164,349

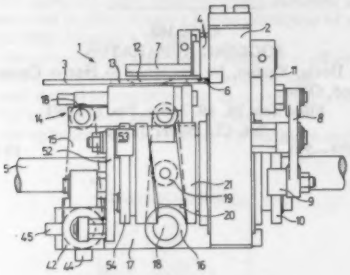
SHEET FEEDER WITH A SIDE PULLING MARK

Josef Marass, Seehausen, Fed. Rep. of Germany, assignor to Georg Spiess GmbH, Gersthofen, Fed. Rep. of Germany

Filed Oct. 17, 1977, Ser. No. 842,940
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647795
Int. Cl.[2] B65H *9/16*
U.S. Cl. 271—250 **20 Claims**

1. A sheet feeding arrangement with a device for lateral sheet alignment, comprising: a sheet stop strip; a pulling member actuated cyclically with said sheet feeding arrangement and moving back and forth transversely to the direction of sheet movement, said pulling member being arranged underneath a sheet to be aligned, said pulling member grasping the bottom of the sheet and pushing the sheet against said sheet

stop strip; a bearing member moving back and forth transversely to the direction of sheet movement; said pulling member comprising a suction grip displaceably mounted on said bearing member; and adjustable spring means for actuating said suction grip in pull direction.



4,164,350

APPARATUS FOR SUPPORTING THE BODY OF A PERSON IN AN UPRIGHT POSITION, IN PARTICULAR FOR THERAPEUTIC WALKING EXERCISES

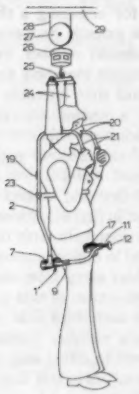
August-Eden Zeijdel, The Hague, and Rudolf B. Teunissen, Noordwijk, both of Netherlands, assignors to N.V. Verenigde Instrumentenfabrieken Enraf-Nonius, Delft, Netherlands

Filed Apr. 20, 1978, Ser. No. 898,117

Claims priority, application Netherlands, Apr. 21, 1977, 7704344

Int. Cl.[2] A61H *3/04*

U.S. Cl. 272—70 **12 Claims**



1. Apparatus for supporting the body of a person in an upright position to relieve the load on the person's legs, in particular for therapeutic walking exercises, including means for receiving and supporting the lower part of the person's body and a suspension assembly for movably supporting said body receiving means, said body receiving means comprising a rigid seat ring member adapted to receive and freely surround the pelvis of the body with ample room for lateral play, said seat ring member having a rear section and a front section, said rear section being provided with an inwardly projecting body support member shaped to engage below the tuber ischii of the body, a pressure pad member adjustably mounted on said seat ring front section and projecting inwardly therefrom in opposite relation to said body support member, and means for adjusting the spacing between said body support member and said pressure pad member to allow said pressure pad member to be pressed against the symphysis of the pubic bones of the person's body resting on said body support member.

4,164,351

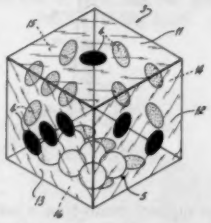
DIE-RESEMBLING GAME CUBE

Exzelon F. Baker, 3933 Cedarwood Pl., Cincinnati, Ohio 45213

Filed May 11, 1978, Ser. No. 904,786

Int. Cl.[2] A63F *9/04*

U.S. Cl. 273—144 B **6 Claims**



1. A game device comprising:

a hollow, transparent cube, the interior faces of said cube having from one to six ball-receiving pockets therein so disposed that the cube resembles a die when viewed from the exterior thereof, one of said faces providing the bottom face of the cube when it is resting on a playing surface, and

a plurality of balls in said cube, each said ball being adapted to fall at random and be captured by one of said ball-receiving pockets in said bottom face of the cube when the cube comes to rest after having been thrown on a playing surface.

4,164,352

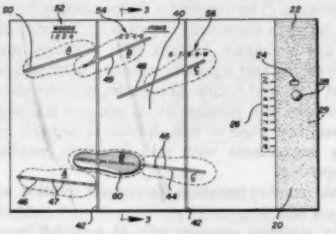
GOLF SWING PRACTICE MAT

John P. O'Brien, 175 E. Delaware Pl., Chicago, Ill. 60611

Continuation-in-part of Ser. No. 834,293, Sep. 19, 1977, Ser. No. 780,271, Mar. 23, 1977, Ser. No. 753,927, Dec. 23, 1976, and Ser. No. 735,761, Oct. 26, 1976, Pat. No. 4,081,918, said Ser. No. 834,293, is a continuation-in-part of Ser. No. 661,779, Feb. 26, 1977, abandoned, said Ser. No. 753,927, is a continuation-in-part of Ser. No. 683,898, May 6, 1976, abandoned. This application Jan. 26, 1978, Ser. No. 872,377

Int. Cl.[2] A63B *69/36*

U.S. Cl. 273—187 A **8 Claims**



1. A golf training device enabling a golfer to learn and practice a proper golf swing, said device comprising:

a mat including a hitting area and a foot placement area;

said hitting area including a teeing area and an artificial grass area surrounding said teeing area,

said foot placement area including at least one line of flight indicator line; and a right (or rear) foot placement indicia, said line of flight indicator line being parallel with the intended line of flight of a golf ball to be struck,

said right foot placement indicia comprising a plurality of

holes in said mat, said holes arranged in a line approximately normal to or to the right of normal of said line of flight indicator at spaced distances from said hitting area;

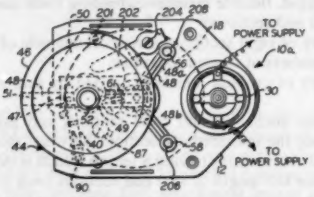
a foot supporting wedge-shaped device, a centrally mounted pin dependent from said wedge-shaped device, said pin adapted to engage and cooperate with said holes comprising a portion of the right foot indicia in said mat, said wedge-shaped device adapted to cant a golfer's right foot toward the intended target.

4,164,353

TOY PHONOGRAPH APPARATUS

Alexander W. Hughes, Jr., Oceanport, N.J., assignor to Janex Corporation, Eatontown, N.J.

Filed Jan. 6, 1978, Ser. No. 867,331
Int. Cl.[2] G11B *17/06, 3/00*
U.S. Cl. 274—1 A **25 Claims**



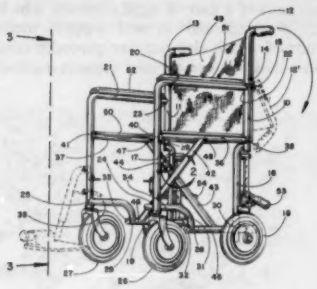
1. In a toy phonograph comprising a housing, said housing comprising a base, a turntable rotatably mounted on said base for rotation about an axis of rotation, a first phonograph record rotatably mounted to one side of said turntable for rotation therewith, said phonograph record having a periphery and a center, a first pickup arm pivoted at one end and having a needle means engageable with a playing surface of said first phonograph record, a first spring means, said first pickup arm being constantly placed under a force of said first spring means which urges said first pickup arm toward the periphery of said first phonograph record and a first speaker cone means resiliently mounted on said housing above said first pickup arm, said first speaker cone means comprising a first lift bar means removably engageable with said first pickup arm in sound reproducing contact; the improvement comprising means for resiliently pressing said first pickup arm needle means into engagement with said first phonograph record for reproducing recorded sound from said first phonograph record playing surface during rotation of said turntable, said pickup arm needle means circumscribing a path of travel across said first phonograph record playing surface from said periphery toward said center during said sound reproducing engagement, said pressing means comprising second spring means, said second spring means comprising a bifurcated spring member resiliently pressing against said lift bar means at a pair of spaced apart positions therealong, one of said positions being located substantially adjacent said phonograph record periphery and the other of said positions being located substantially adjacent said center, whereby said bifurcated spring member presses against said lift bar means substantially adjacent the limits of said path of travel of said pickup arm needle means for substantially uniformly resiliently biasing said lift bar means against said first pickup arm with a substantially uniform biasing force for exerting substantially uniform pressure on said needle means throughout said entire path of travel circumscribed by said needle means.

4,164,354

NARROW FRAME WHEELCHAIR

Keith S. Rodaway, Santa Monica, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Mar. 6, 1978, Ser. No. 883,573
Int. Cl.[2] B62B *11/00*
U.S. Cl. 280—42 **3 Claims**



1. A narrow frame wheelchair having a seat, left rear and front wheels and right rear and front wheels, including in combination:

(a) left and right seat support frame tubes defining therebetween the width of said seat when said wheelchair is in unfolded position;

(b) left and right lower frame tube means connected between the left rear and front wheels and right rear and front wheels respectively, such that the left rear wheel and left front wheel are in the same vertical plane as the left seat support tube and the right rear wheel and right front wheel are in the same vertical plane as the right seat support frame tube;

(c) first and second crossing tubes having their opposite ends respectively connected to the left lower frame tube means and right seat support frame tube and the right lower frame tube means and left seat support tube; and

(d) pivot means connected to said crossing tubes to pivot the tubes about a pivot axis spaced vertically above the cross-over point of said tubes a given distance, said given distance being such that said crossing tubes can be pivoted towards a vertical parallel relationship by moving said seat support frame tubes towards each other and lower frame tube means simultaneously towards each other until said lower frame tube means are in side-by-side engaging relationship to fold said wheelchair, and whereby said left rear and left front wheels are still in the same vertical plane as said left seat support tube and said right rear and right front wheels are still in the same vertical plane at said right seat support tube when said wheelchair is folded to result in a minimum overall width for the folded wheelchair for a given seat width when the wheelchair is unfolded.

4,164,355

CADAVER TRANSPORT

Russell K. Eaton, and Ronald A. Elenbaas, both of Kalamazoo Township, Kalamazoo County, Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Dec. 8, 1977, Ser. No. 858,623
Int. Cl.[2] A61G *1/02*
U.S. Cl. 296—20 **11 Claims**

1. In a wheeled transport having a compartment for concealing a cadaver, comprising an undercarriage having four wheels substantially arranged in a rectangle and for engagement with a substantially flat supporting surface;

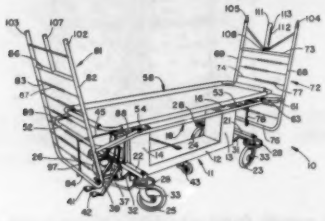
a substantially flat, rectangular and elongated frame means;

a pair of spaced, upright means mounted upon said undercar-

riage and connected to said frame means for supporting same in a substantially horizontal position;

an elongated and substantially flat cadaver support means mounted upon said frame means;

an elongated substantially flat and rectangular canopy support means consisting of two similar and flat support members releasably connectible at adjacent edges, each of said support members being rigidly secured to corresponding ends of a pair of rigid elements which are substantially perpendicular to said support members, the other ends of which elements are pivotally connected to said frame means whereby said support members can be



pivoted between coplanar horizontal positions and substantially upright positions at the opposite ends of said frame means;

means for positively limiting movement of said support members toward and away from each other, said movement limiting means comprising flexible elements extending between and secured to the remote ends of said support members and the corresponding ends of said frame means, and tubular lock means at the adjacent ends of said support members; and

a flexible canopy adapted to be draped over the canopy support means so as to conceal the space between said frame means and said canopy support means.

4,164,356

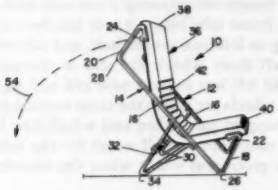
CHAIR

Richard G. Knight, 155 Wimbleton, Birmingham, Mich. 48008

Filed Dec. 19, 1977, Ser. No. 861,995

Int. Cl.[2] A47C *3/00*

U.S. Cl. 297—1 **1 Claim**



1. A chair comprising:

a pair of multi-angled, C-shaped frame members disposed substantially parallel to and laterally spaced from each other, one end section of each of said frame members defining a leg which cooperates to form a first pair of legs for supporting the frame members in an upright position;

the other end of each of said frame members defining a second leg which cooperates to form a second pair of legs longitudinally spaced from said first pair of legs and adapted to support said frame members in a second position;

an intermediate pair of legs carried by said frame members at a position between said first pair of legs and said second pair of legs and at a position closer to said first pair of legs such that said chair may be positioned on said first pair of legs and said intermediate pair of legs in a first position to receive and support a person, said chair being rotatable about said intermediate legs to said second position wherein said chair is supported on said second pair of legs;

a base member rigidly connecting said intermediate pair of legs;

a pair of hinge members extending between the opposite ends of said C-shaped frame members and supported thereby, said hinge members maintaining said frame members in said spaced relationship;

a flexible cushion having a first end section pivotally supported by one of said hinge members and a second end section pivotally supported by the other of said hinge members, the distance between said hinge members being less than the distance between said cushion end sections such that said cushion is disposed along a curved path to define a seat, said cushion comprising said first and second end sections and a plurality of cushioned, intermediate, rigid sections interconnected by a flexible material to permit relative, pivotal movement between said intermediate sections and said end sections;

said cushion being disposed along different curved paths when said chair is supported in said two positions, said cushion further comprising:

an elongated, flexible member extending from said first and second end sections;

a plurality of rigid sections carried on one side of said flexible members at spaced locations;

a plurality of cushion members carried by said rigid members;

a laminate enclosing said rigid sections and said cushion sections, the intermediate sections between said first and second end sections having a length which is substantially less than the length of said end sections such that there is relative pivotal movement between said intermediate sections and said end sections so as to permit said cushion member to be shaped along a curved path; and

means restraining relative pivotal movement between said frame members and said end sections.

4,164,357

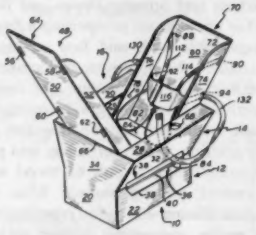
COMBINATION INFANT AND CHILD SEAT

Eileen Conachey, 14 Cherry La., Pomona, N.Y. 10970

Filed Jun. 26, 1978, Ser. No. 918,916

Int. Cl.[2] A47C *1/08*

U.S. Cl. 297—250 **11 Claims**



1. A combination infant and child seat of the type intended to be used in combination with an auto seat, said infant seat comprising:

(a) a base housing for being disposed upon the auto seat and having a front, back, and seat portion;

(b) a first back rest secured to said back of said base housing;

(c) a second back rest removably secured to said front of said base housing; said first and second back rests being so dimensioned such that, with said second back rest in position, the infant may be received and, with said second back rest removed from said base, said first back rest, in combination with said base, being so dimensioned as to receive the child; and

(d) means for securing the infant or child to said seat and securing said infant and child seat to the auto seat.

4,164,358

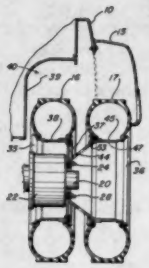
DUAL WHEEL CONVERSION ASSEMBLY FOR VEHICLES

Robert N. Entrup, Wheatridge, Colo., assignor to Design Automotive Distributing, Denver, Colo.

Continuation of Ser. No. 617,284, Sep. 20, 1975, abandoned. This application Nov. 9, 1977, Ser. No. 849,964

Int. Cl.[2] B60B *11/00*

U.S. Cl. 301—36 R **3 Claims**



1. In a vehicle which has a wheel well provided with an inner wall and an axle terminating in a mounting hub assembly including a cylindrical brake housing and a plurality of stud bolt attachment means arranged in parallel relation to the axis of the axle with the stud bolt attachment means extending outwardly from the brake housing at the outer end of the assembly wherein said hub assembly is spaced but a limited distance outwardly from the inner wall of the wheel well, apparatus for accommodating dual wheel mounting to the axle within the wheel well comprising in combination:

a first wheel including a first cylindrical rim having an outer end, a first radially outwardly opening circumferential channel for receiving a tire and a first support web in its entirety in the shape of a flat annular plate with a circular perimeter corresponding in diameter with said outer end of said first rim, said annular plate attached at its perimeter directly to the outer end of said first rim in radial alignment thereto, said first support web having a plurality of bores therethrough in radially spaced relation to the central axis of said first wheel for alignably receiving the axle stud bolt attachment means, said first cylindrical rim and said first support web being dimensioned and arranged such that said first rim is positioned to extend inwardly from said first support web in axially co-extensive and concentric radially outward spaced relation to the brake housing and in axially outward spaced relation to the inner wall of the wheel well in which the axle terminating assembly is located, and

a second wheel including a second cylindrical rim having a second radially outwardly opening circumferential channel for receiving a tire, said second channel having a bottom surface portion, an outer sidewall portion and an inner sidewall portion, said bottom surface portion having an inner edge formed as a reverse curved flange, said reverse curved flange attached to said inner sidewall portion in over and under configuration, and a second support web attached to and extending axially from said reverse curved flange and converging inwardly from said reverse curved flange toward the central axis of said second wheel to the perimeter of and terminating in a flat, annular flange portion concentric with the axis of said second wheel and laying in a plane perpendicular to said axis of said second wheel in axially spaced, outwardly extending relation to said one end of said second wheel, said annular flange portion having a plurality of bores therethrough in parallel, radially spaced relation to said central axis of said second wheel for alignably receiving the axle stud bolt attachment means, the distance of axial extension of said second support web from said one end of said second wheel to said annular flange portion being sufficient to retain tires positioned on said first and second rim channels, respectively, in axially spaced, non-interfacing orientation with each other when said annular flange portion is disposed in flush contacting relation to said first support web.

4,164,359

HYDRAULIC TRANSPORTATION APPARATUS FOR SOLID MATERIALS

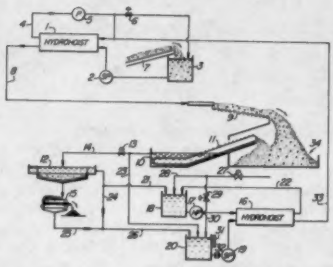
Masakatsu Sakamoto, Matsudo; Kenji Uchida, Kashiwa, and Takafumi Karino, Nishiibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 11, 1978, Ser. No. 868,663

Claims priority, application Japan, Jan. 17, 1977, 52/2870

Int. Cl.[2] B65G *53/30*

U.S. Cl. 406—121 **3 Claims**



1. Apparatus for hydraulically transporting particulate solid material having a wide range of particle-size distribution, comprising:

a first tank receiving therein a first slurry, said first slurry being a mixture of said particulate solid material and a liquid as a transporting medium;

a first hydrohoist connected to said first tank and operated by a driving liquid for forcing said first slurry from said first tank;

a transporting line having one end thereof connected to said first hydrohoist, said first slurry forced by said first hydrohoist being transported through said transporting pipe;

coarse particle separating means located at the other end of said transporting line and receiving said first slurry transported through said transporting line for removing relatively coarse particles from said first slurry to produce a second slurry containing relatively fine particles;

solid-liquid separating means connected to said coarse particle separating means and receiving said second slurry from said coarse particle separating means for removing fine particles from said second slurry to produce a substantially particle-free liquid;

a second tank;

conduit means connecting said coarse particle separating means and said solid-liquid separating means to said second tank for introducing therein heavy media including said second slurry from said coarse particle separating means and said substantially particle-free liquid from said solid-liquid separating means;

means associated with said second tank for adjusting the concentration of said heavy media in said second tank;

a second hydrohoist positioned between said second tank and said first hydrohoist for returning said heavy media from said second tank to said first hydrohoist as said driving liquid therefor;

second conduit means having one end connected to said

second hydrohoist and another end connected to said first hydrohoist;

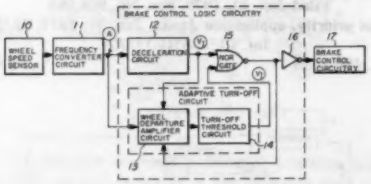
means for returning a part of the driving liquid discharged from said first hydrohoist to the second conduit means for reuse as a driving liquid for the first hydrohoist and feeding the remaining driving liquid into said first tank as said transporting medium.

4,164,360

CONTROL CIRCUIT HAVING ADAPTIVE TURN-OFF FEATURE FOR A VEHICLE SKID CONTROL SYSTEM

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 21, 1977, Ser. No. 853,365
Int. Cl.[2] B60T *8/08*
U.S. Cl. 303—110 **7 Claims**



1. In a vehicle skid control system for selectively controlling the engagement and disengagement of the vehicle brakes in accordance with selected braking conditions, control circuit means for producing a brake inhibiting control signal disengaging the vehicle brakes in response to an occurrence indicative of an imminent skid condition and terminating the brake inhibiting control signal to re-engage the vehicle brakes in response to a compensating operation of the vehicle wheels, wherein the brake inhibiting control signal is produced and terminated in a continuing sequence to automatically effect pumping of the vehicle brakes, said control circuit means comprising:

a wheel speed deceleration circuit having a predetermined deceleration rate threshold;

an adaptive turn-off circuit connected in parallel with said deceleration circuit;

each of said deceleration circuit and said adaptive turn-off circuit having respective inputs for receiving a signal proportional to vehicle wheel speed;

said deceleration circuit being responsive to a negative slope of said wheel speed signal attaining said predetermined deceleration rate threshold for providing a first brake inhibiting control signal as an output;

said adaptive turn-off circuit being responsive to the coefficient of friction of the surface over which the vehicle is travelling and the degree to which vehicle wheel speed falls below vehicle speed for providing a second brake inhibiting control signal as an output, said adaptive turn-off circuit including

wheel departure amplifier means for inverting said wheel speed signal, referencing said inverted wheel speed signal to a reference voltage, and effectively shifting said inverted wheel speed signal in time an amount proportional to the coefficient of friction of the surface over which the vehicle is travelling, and

turn-off threshold means connected to the output of said wheel departure amplifier means and having a threshold value incorporated therein for terminating said second brake inhibiting control signal when the output of said wheel departure amplifier means falls below said threshold value; and

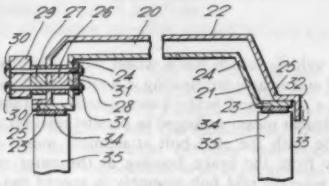
brake control means operably connected to said deceleration circuit and said adaptive turn-off circuit and being responsive to said first and second brake inhibiting control signals for disengaging the vehicle brakes during deceleration when a wheel speed deceleration rate corresponding to the predetermined deceleration rate threshold is attained to produce said first brake inhibiting control signal from said deceleration circuit and sequentially engaging and disengaging the vehicle brakes during acceleration upon termination of said first brake inhibiting control signal from said deceleration circuit and upon subsequent reception of said second brake inhibiting control signal from said adaptive turn-off circuit.

4,164,361

DEEP-FREEZE CABINET WITH TRANSPARENT CLOSURE

Brian J. Grimble, Baldock, and Michael R. Rouse, Dunstable, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 747,382, Dec. 3, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,606
Claims priority, application United Kingdom, Sep. 17, 1976, 38586/76
Int. Cl.[2] A47B *77/08*; A47F *3/04*
U.S. Cl. 312—236 **9 Claims**



1. A deep freeze cabinet having a closure formed from inner and outer transparent rigid shaped sheets of a thermoplastic material, the inner sheet being accommodated in the space formed by the outer sheet and the sheets being bonded together at their perimeters to form a flat peripheral flange bounding a double-walled enclosure in which the walls of the enclosure are essentially parallel to each other over a major proportion of their area and are separated by a distance of at least 10 mm and less than 40 mm, said flange sealing contacting an upper surface of the wall of the deep freeze cabinet so that the inner shaped sheet is positioned outside the interior of the deep freeze cabinet.

4,164,362

MODULAR CARD CAGE WITH MULTIPLE POWER BUS BAR MEANS

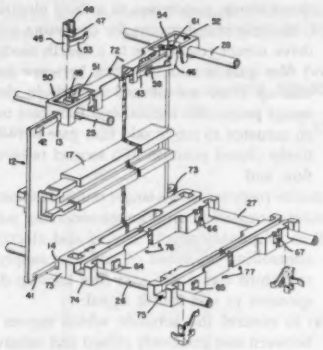
Robert F. Cobaugh, Elizabethtown, and Donald J. Doty, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 11, 1977, Ser. No. 777,279
Int. Cl.[2] H05K *1/12, 1/14*
U.S. Cl. 339—17 M **5 Claims**

1. In an interconnection system having multiple cards with opposite side edges of said cards slidably mounted in slotted card guides and with electrical connectors mounted on said cards and electrically interconnecting adjacent cards, the improvement comprising:

elongated conductors passing through said card guides, said card guides being distributed along said conductors, and electrical contacts in said card guides engaged with said conductors and frictionally engaging circuit paths on said

cards without passing through said cards or entering said connectors,



said cards being disengaged from said contacts upon slidable removal from said card guides.

4,164,363

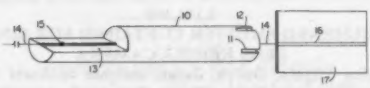
SINGLE MODE FIBER-TO-CHANNEL WAVEGUIDE THROUGH-LINE COUPLER

Hui-pin Hsu, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1978, Ser. No. 870,774

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.17 **7 Claims**



1. A coupler for securely coupling an optical fiber to an optical channel waveguide laid down on a plate-like substrate comprising:

a capillary tube, said optical fiber extending through the center and out both ends thereof, one end of the tube being slotted diametrically and the other end being cut diametrically so that it is semicircular in shape and exposes the fiber at that end,

the plate-like substrate, after the end of the fiber is properly aligned with the end of the channel waveguide, being pushed into the slot to mate snugly and form a secure mechanical joint therewith.

4,164,364

INPUT/OUTPUT COUPLER FOR MULTI-MODE OPTICAL FIBERS

Hans H. Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

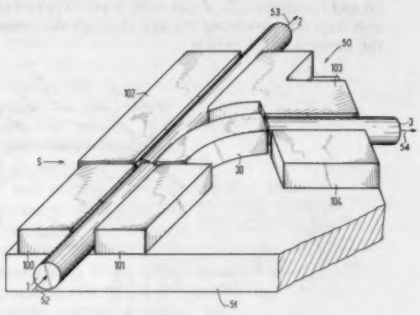
Filed Jun. 7, 1977, Ser. No. 804,398

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625855

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.17 **10 Claims**

1. A coupler for use with multi-mode light conducting fibers to couple-out and couple-in a light signal to the fibers comprising a substrate, a first light conductor being disposed on the substrate and having an end face forming a coupling surface, a main light conducting fiber being disposed on the substrate with its end face at the coupling surface and the center of the end face being offset by a distance a from the center of the coupling surface, a strip waveguide being disposed on the substrate and having a face in contact with a portion of the coupling surface of the first light conductor, said strip waveguide extending to a branch light conducting fiber so that a portion of a signal entering the coupler in the first light conductor is applied to both the main and branch light conducting fibers and signals entering the coupler in the branch and main light conducting fibers are applied to the first light conductor.



4,164,365

LIGHT VALVE FOR CONTROLLING THE TRANSMISSION OF RADIATION COMPRISING A CELL AND A STABILIZED LIQUID SUSPENSION

Robert L. Saxe, New York, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.

Division of Ser. No. 596,198, Jul. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 476,106, Jun. 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 276,769, Jul. 31, 1972, abandoned. This application Aug. 10, 1978, Ser. No. 932,512

Int. Cl.[2] G02F *1/00*

U.S. Cl. 350—362 **25 Claims**

1. A light valve for controlling the transmission of radiation, which comprises a cell and a liquid suspension in said cell; said liquid suspension comprising:

an electrically resistive liquid suspending medium;

a plurality of small, anisometrically shaped, light-polarizing, halogen-containing particles suspended in said suspending medium; and

a copolymer of at least two different monomers;

at least one of said monomers having a sterically unhindered functional group selected from the group consisting of an OH group and an acidic group, and at least one of said monomers having a branched group, the distance from the backbone of the copolymer to said sterically unhindered functional group most distant from the backbone being less than the distance from the backbone to the terminal group of said branched group, the branched groups in said copolymer being sufficiently soluble so that the copolymer as a whole is substantially dissolved in said liquid suspending medium.

4,164,366

VARIABLE OUTPUT COUPLED RESONATOR

Edward A. Sziklas, and Robert J. Freiberg, both of N. Palm Beach, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 4, 1977, Ser. No. 848,792

Int. Cl.[2] H01S *3/05*

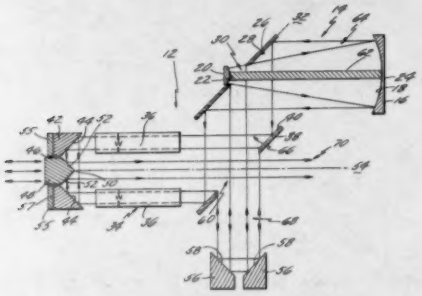
U.S. Cl. 350—299 **15 Claims**

1. A resonator comprising:

a mode control cavity defined at one end by a first mirror having a concave reflective surface and at the other end by a second mirror having a convex reflective surface wherein the first and second mirrors are positioned on and

symmetrically about an axis through a centerline of the mode control cavity;

a power extraction cavity defined at one end by a first retroreflector and at the other end by a first reflector wherein the first retroreflector and the first reflector are positioned on and symmetrically about a beam axis wherein the beam axis does not superpose the axis through the centerline of the mode control cavity;



means for optically coupling the mode control cavity and the power extraction cavity; and

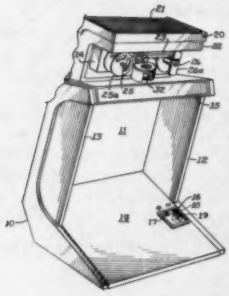
a cone having a conical reflective surface centrally located within an aperture in the first retroreflector and adapted for coupling the radiation out of the resonator as an output beam having a continuous cross section.

4,164,367

FILM TRANSPORT SYSTEM FOR MICROFILM READER

Edward R. Wadleigh, Hemet, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jul. 12, 1977, Ser. No. 814,933
Int. Cl.[2] G03B *23/12*
U.S. Cl. 353—26 R **7 Claims**



1. A microfilm reading apparatus comprising:

(a) a housing having an image projection means near the top and a large-size inclined image receiving portion inside the base at the bottom;

(b) means mounted near the top of said housing for transporting image-bearing film past said image projection means to cast an image from said film vertically downwardly onto said portion of said housing which is in a generally horizontal orientation, whereby said-image receiving portion may be used as a desk when it is desirable to make notes from said projected image; and

(c) said film transport mechanism comprising:

(i) an electrically driven means including film supply and take-up reels mounted on said housing with means for providing limited lateral movement of said reel mount with respect to said housing, said lateral movement occurring in response to first or second electrical signals;

(ii) variable speed means for operating said film supply drive means responsive to a third electrical signal;

(iii) variable speed means for operating said film take-up drive means responsive to a fourth electrical signal;

(iv) film gate means disposed between said supply and take-up drive means and located in the path of said image projection means, said film gate means including an actuator to move said film gate between a first relatively closed position to a second relatively open position; and

(d) means responsive to a single multi-position control mechanism mounted on said image-receiving portion

(i) to selectively supply any of said electrical signals for controlling the speed of said film supply responsive to said third signal and said film take-up drive means responsive to said fourth signal;

(ii) to control the actuator which moves said film gate between said relatively closed and relatively open positions responsive to either said third or said fourth signals; and

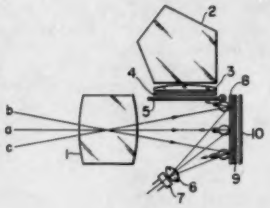
(iii) to control the lateral movement of said film transport mechanism relative to said housing responsive to either said first or said second signals, whereby movement of said multi-position control mechanism causes movement of said image in the direction in which said control mechanism moves.

4,164,368

ROUGHENED SHUTTER CURTAIN(S) FOR SINGLE LENS REFLEX CAMERA

Katsuhiko Miyata, Omiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1977, Ser. No. 814,951
Claims priority, application Japan, Jul. 14, 1976, 52-93727[U]
Int. Cl.[2] G03B *7/08, 9/28*
U.S. Cl. 354—23 R **8 Claims**



1. In a single reflex camera operable in a through-the-lens light measuring mode and including a reflex mirror box, a lens mounted on a front side of the box, at least one shutter curtain mounted in the box proximate the opposite, rear side thereof, and a light sensing element mounted in the box and oriented to sense light flux entering through the lens and reflected thereon by the surface of the shutter curtain facing the lens, the improvement characterized by:

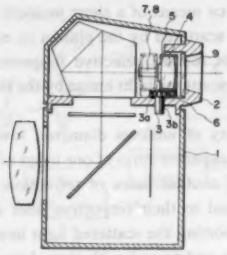
said shutter curtain being metallic and its surface being bare, uncoated and directly roughened over its entirety to provide more uniform light diffusion and reflective scattering characteristics, whereby the output of the light sensing element provides a more accurate measure of the integrated or averaged light intensity distribution over the entire picture or viewing frame.

4,164,369

DIOPTER-ADJUSTING DEVICE FOR USE IN FINDER-INTERCHANGEABLE TYPE SINGLE LENS REFLEX CAMERA

Fumio Urano, Omiya, and Norimichi Takahashi, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1978, Ser. No. 912,145
Claims priority, application Japan, Jun. 2, 1977, 52-65049
Int. Cl.[2] G03B *13/06*
U.S. Cl. 354—219 2 Claims



1. A diopter adjusting device in an interchangeable-finder type single lens reflex camera for adjusting the position of an eyepiece along the optical axis thereof, the improvement characterized in that said adjusting device comprises:

an eyepiece holder for holding said eyepiece and slidably mounted within said finder along the optical axis of said eyepiece; and

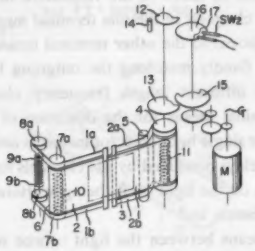
an operating means for sliding said eyepiece holder, said operating means being concealed from the exterior of said camera when said finder is mounted on said camera.

4,164,370

SHUTTER DEVICE IN A CAMERA

Shuji Kimura, Yokohama; Shigeo Akasaka, Kodaira; Koichi Daitoku, Tokyo; Hiroshi Hasegawa, Tokyo, and Makoto Kimura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 18, 1977, Ser. No. 843,317
Claims priority, application Japan, Oct. 21, 1976, 51-140167[U]; Oct. 29, 1976, 51-129365; Nov. 16, 1976, 51-157760[U]
Int. Cl.[2] G03B *9/28, 9/58*
U.S. Cl. 354—243 5 Claims



1. A shutter device in a camera which effects photography with shutter curtains maintained open for a predetermined time, comprising:

a rotatable member; spring means biasing said rotatable member for normal rotation;

shutter opening formation means operatively associated with said rotatable member to move in a direction to form a shutter opening upon normal rotation of said rotatable member and to move in a direction to close the shutter opening upon reverse rotation of said rotatable member;

drive means;

control means operatively associated with said drive means for displacement to a first position to block normal rotation of said rotatable member and to maintain the shutter in closed position, a second position in which it permits the normal rotation of said rotatable member by the bias force of said spring immediately after said drive means becomes operative, and a third position for transmission of the drive of drive means to said rotatable member to reverse the rotation of said rotatable member after the normal rotation thereof;

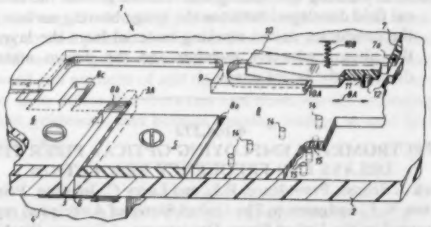
means for stopping normal rotation of said rotatable member; and control means for starting said drive means in response to an extraneous operating signal for starting photography, for stopping said drive means after the normal rotation of said rotatable member by the bias force of said spring is started, for starting said drive means in response to an extraneous signal for terminating the photography, and for stopping said drive means when said shutter has reached its closed position.

4,164,371

PHOTOGRAPHIC DEVELOPING MACHINE

Wolfgang Viehrig, and Werner Sperber, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gavaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,758
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748506
Int. Cl.[2] G03D *3/13*
U.S. Cl. 354—312 13 Claims

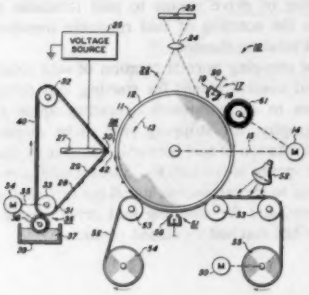


1. In a photographic developing machine, particularly for developing webs of exposed photographic paper which have different widths and are confined in cassettes, an apparatus for positioning cassettes preparatory to withdrawal of webs from their interior, said apparatus comprising a feed table having at least one channel; means defining a chamber disposed at one side of said table and communicating with said channel; and a substantially plate-like selector adjacent to the other side of said table and having a plurality of differently dimensioned apertures, said selector being movable between a plurality of positions in each of which a different aperture registers with said channel to define therewith a passage through which a web having one of several different widths can be advanced from the interior of a cassette into said chamber.

4,164,372
METHOD AND APPARATUS FOR DEVELOPING AN ELECTRICAL IMAGE

Robert W. Gundlach, Victor, N.Y., and David H. Perry, deceased, late of Webster, N.Y. (by Joyce Perry Province, administratrix), assignors to Xerox Corporation, Stamford, Conn.

Filed May 31, 1974, Ser. No. 474,998
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 DD **13 Claims**



1. Apparatus for developing an electrostatic latent image provided on a charged surface of a photoconductive member, comprising:

a non-conductive donor sheet;

a means for placing on one side of the donor sheet a layer of electrostatically charged marking material;

means for supporting the sheet with the layer of marking material spaced from but facing the image bearing surface;

a conductor having an edge;

means for electrically coupling the conductor to ground;

means for sliding the edge and the other side of the donor sheet with respect to each other; and

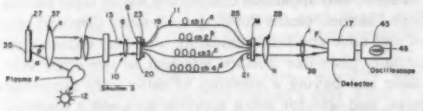
means for moving, during said sliding, the edge and the photoconductive member with respect to each other to bring different parts of the image bearing surface within a predetermined distance from the edge, the image bearing surface of the photoconductive member being kept out of contact with the layer of marking material on the donor,

whereby during said sliding and relative motion the electrical field developed between the image bearing surface and the conductor drives marking material from the layer to the photoconductive member and the driven material develops the latent image.

4,164,373
SPECTROMETER EMPLOYING OPTICAL FIBER TIME DELAYS FOR FREQUENCY RESOLUTION

Jack J. Schuss, Providence, R.I., and Larry C. Johnson, Princeton, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 12, 1978, Ser. No. 868,952
Int. Cl.[2] G01J *3/30*; G01N *21/52*
U.S. Cl. 356—316 **6 Claims**



1. In a Thomson scattering system for diagnosing a time varying plasma with a short incident chromatic light pulse of below 100 nanoseconds duration for the selective spatial and frequency analysis of the light with a single light detector, the improvement for providing a broad range of optical time delays for incident light passing through the plasma that is Thomson scattered by the plasma and contains a variety of frequencies that are dispersed in space as spectral lines according to a specific system of stepping for the selective frequency analysis of the scattered light with a single light detector, comprising:

a. single light detector means;

b. light source means of a short incident light pulse that is Thomson scattered by the plasma to contain a variety of frequencies for the selective frequency analysis of the Thomson scattered light image by the single light detector means;

c. A plurality of uniform diameter, low-loss, glass fibers having transparent cores of one index of refraction, annual sleeves of another index of refraction, and flat polished ends normal to their respective fiber axes for receiving and transporting the scattered light image along the fiber areas from end to end with time delays that correspond with the individual lengths of the fibers;

d. a plurality of frequency channels formed from said fibers having different lengths and a plurality of continuous, equal length fibers in each channel for providing a specific system of stepping that transmits the scattered light image with equal time delays in each of the plurality of fibers in each channel;

e. spaced apart, picture-frame-shaped terminal means for holding the respective outer, adjacent, terminal diameters of the annual sleeves at the opposite ends of the fibers in each channel in contact with each other in longitudinally extending arrays having correction means for nullifying the imperfections in the polish of the ends and continuously holding the respective ends in spaced apart planes according to a specific system of stepping that is fixed for the different length frequency channels;

f. matching means adjacent to one terminal means having means for continuously and fixedly dispersing the incident light frequencies in space and orientating the frequencies continuously and fixedly in space as a function of the specific system of stepping provided by the orientation and location in space of the respective different length frequency channels in the one terminal means; and

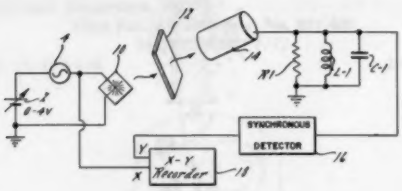
g. means adjacent to the other terminal means for continuously and fixedly matching the outgoing light from the respective different length frequency channels of the other terminal means for the detection of the outgoing light by the single light detector means in accordance with the time delays produced by the channels for determining the effects on the light by its being scattered by the time varying plasma; and

h. shutter means between the light source means and the plurality of channels for selecting a portion of the pulse that is shorter than the successive time delays between channels and transmitting the spatially dispersed frequencies to the channels for detection by the detection means as temporally dispersed frequencies, the detector means being a photomultiplier light detection means for detection of the temporally dispersed frequencies for a time that is long compared to the successive time delays produced.

4,164,374
SPECTROPHOTOMETER UTILIZING A SOLID STATE SOURCE OF RADIANT ENERGY HAVING A CONTROLLABLE FREQUENCY SPECTRA CHARACTERISTIC

John J. Lambe, Birmingham, and Shaun L. McCarthy, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 836,624, Sep. 26, 1977. This application Sep. 30, 1977, Ser. No. 838,338
Int. Cl.[2] G01J 3/10, 3/12
U.S. Cl. 356—402 16 Claims

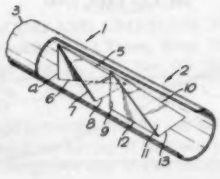


1. A solid state source of visible radiant energy comprising:
a first electrode element;
an insulating layer overlying said first electrode element; and
a counter-electrode overlying said insulating layer to form a tunnel junction which generates surface plasmon modes in response to voltage applied between said first electrode and said counter-electrode, wherein said counter-electrode includes means for providing optical output coupling of said surface plasmon modes in a visible light spectra having a high frequency cutoff $\nu_{co}=|eV|/h$, wherein h is the Planck constant, e is the electron charge and V is the value of the applied voltage, employed in a spectrophotometer apparatus comprising:
a modulating power supply connected to said source;
a sample located to receive radiation from said source;
means for detecting the radiation transmitted through said sample; and
means connected to said detecting means for indicating the transmittance characteristics of said sample.

4,164,375
IN-LINE MIXER

David J. Allen, Stockport, England, assignor to E. T. Oakes Limited, Macclesfield, England

Filed May 20, 1977, Ser. No. 798,873
Claims priority, application United Kingdom, May 21, 1976, 21210/76; Nov. 24, 1976, 49007/76
Int. Cl.[2] B01F 5/06
U.S. Cl. 366—337 15 Claims

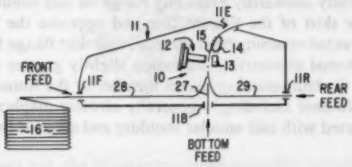


1. An in-line mixer comprising a tube, a plurality of mixing elements arranged in series longitudinally along said tube, each mixing element comprising a one piece plate member having four edges meeting in four corners, said plate being folded along a fold line extending between two opposite corners of the plate, to form two substantially planar triangular shaped portions angled with respect to one another, the triangular shape being defined by a base edge, an edge formed by said fold line and a free edge, the base edge extending across the tube, substantially centrally thereof from one side to the other of the tube.

4,164,376
MULTIPLE PATH PAPER FEED SYSTEM FOR A PRINTER

Russel E. Yarp, Mt. View, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Dec. 15, 1977, Ser. No. 860,750
Int. Cl.[2] B41J 15/04
U.S. Cl. 400—642 4 Claims



1. A data printer for a computer or data processing system having a housing with front, rear and bottom openings for optional entry of paper, the improvement for facilitating paper feed to said printer from optional alternate locations, comprising:
a first paper guideway extending downwardly from the front of the platen of said printer, said first guideway allowing unimpeded entry of paper from below said printer to said platen, and
at least one arcuate paper guideway extending from a location external to said printer and lateral of said platen, said arcuate guideway curving upwardly and opening into said downwardly extending guideway so as to allow unimpeded entry of paper from said external location via said arcuate guideway and the upper portion of said downwardly extending guideway to said platen, said arcuate guideway comprising first and second spaced generally parallel arcuate rear guide members defining a rear arcuate guideway for directing paper fed through said rear opening to the front of said platen, third and fourth spaced arcuate front guide members defining a front arcuate guideway for directing paper fed through said front opening to said platen, the forward end portions of said first and second guide members being spaced from the rearward end portions of said third and fourth guide members so as to define therebetween said downwardly extending first guideway, said bottom opening leading to said first guideway.

4,164,377
DUAL-SEAL, BALL-TYPE DISPENSING PACKAGE

Richard D. Lohrman, and George V. Mumford, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 17, 1977, Ser. No. 842,717
Int. Cl.[2] B05C 17/02; B43K 9/00
U.S. Cl. 401—213 3 Claims

1. In a ball-applicator dispensing package comprised of a container having a neck portion including an annular rim defining an end opening for dispensing the contents and external screw thread, and an annular groove above said thread and adjacent said rim, an annular ball-retaining fitment having an annular shoulder with a container-engaging skirt provided with inwardly directed bead engaged in said neck groove, and an axially extending, annular ball-retaining fitment having an annular shoulder with a container-engaging skirt provided with inwardly directed bead engaged in said neck groove, and an axially extending, annular ball-retaining socket member

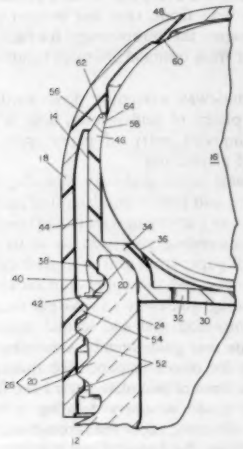
above said neck rim, a dispensing ball rotatably held by said socket of the fitment, a minor surface portion of the ball extending outwardly above said socket to define a dispensing surface, the improvement therein comprising

a resilient annular flange portion on said socket member at the axial outer end thereof engageable with said ball above the maximum diameter thereof, and an annular surface portion on the shoulder thereof engageable with said ball below the maximum lateral diameter thereof,

said flange portion and said annular surface on the shoulder of the fitment being operable, respectively, for substantially simultaneously, sealingly engaging the ball against leakage,

a radially outwardly extending flange on said annular shoulder skirt of the fitment disposed opposite the inwardly directed retaining bead thereon, said skirt flange having an external diametrical dimension slightly greater than that of the ball-retaining socket member of the fitment,

said fitment including a generally circular diaphragm connected with said annular shoulder and adapted to fit in the



end opening of the container, said diaphragm having at least one aperture for dispensing content of the container, and

a screw closure member closed at a dome-shaped end having an interiorly threaded skirt engageable with the thread on said neck of the container and including a radially inwardly extending annular bead on said skirt above the threads thereof, the internal diameter of said bead being slightly less than the diameter of the radial flange on said fitment skirt, whereby the fitment is adapted for preassembly with the screw closure prior to assembly on the container, and an inwardly-directed annular bead on the interior of said closure member for exteriorly engaging said flange portion of the fitment during screw application thereof on said container, the engagement of said annular bead of the closure with the annular resilient flange of the fitment wedging said flange against said ball to form a first seal therebetween in the dispensing package, and simultaneously downwardly loading the socket member and ball to form a second seal between the annular shoulder of the fitment and the ball.

4,164,378

ROPE FITTING

Joseph J. Linehan, Arlington, Mass., assignor to Samson Ocean Systems, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 830,325, Sep. 2, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,774

Int. Cl.[2] F16G *11/00*

U.S. Cl. 403—210 **9 Claims**

1. A fitting in a rope providing for connection of said rope to marine gear, said fitting comprising

a recurving portion with a crown formed in said rope,

a load-distributing structure positioned within said recurving portion, said distributing structure having an aperture therethrough passing within said recurving portion in a direction perpendicular to the plane thereof for insertion of a shackle bolt, said load-distributing structure providing a bearing surface for a shackle bolt and distributing a force applied by a shackle bolt to said bearing surface to the crown of said recurving portion, and

a mass of tough, wear-resistant material encapsulating said crown and said load-distributing structure to form an integral plug, said plug being shaped to be inserted into and mate with a protective shroud of predetermined interior shape, said plug being non-adhering to said shroud to permit easy removal therefrom.

4,164,379

OFFSHORE PIPE LAYING

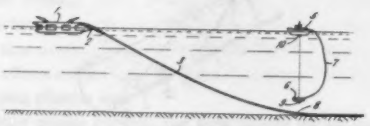
Lee R. Denman, P.O. Box 52891, Houston, Tex. 77052

Filed Nov. 14, 1977, Ser. No. 851,193

Claims priority, application United Kingdom, Nov. 15, 1976, 47582/76

Int. Cl.[2] F16L *1/00*

U.S. Cl. 405—158 **10 Claims**



1. A method of laying pipeline offshore comprising the steps of guiding a pipe laying barge along, or parallel with, a predetermined right of way, feeding a continuous length of pipe from the barge to the sea bed so that the pipe is laid in the right of way, driving, by control from a surface vessel, a remotely controlled submersible along the track of the pipe as laid, determining the position of the submersible relative to the surface vessel, ascertaining, by means of sonic location appara-

tus on the submersible, the position of the touch down point of the pipeline, computing lateral deviation of the touch down point from the desired predetermined track of laid pipe within the right of way, and controlling lateral displacement of the pipe laying barge in accordance with the computed deviation of the touch down point so as to reduce the aforementioned deviation.

4,164,380

MILLING CUTTER WITH ADJUSTMENT FOR FACE RUNOUT

Robert W. Peters, Saegertown, Pa., assignor to Greenleaf Corporation, Saegertown, Pa.

Filed Feb. 27, 1978, Ser. No. 881,400
Int. Cl.[2] B26D 1/12
U.S. Cl. 407—36 **2 Claims**

1. A milling cutter body having a bit receiving slot, an indexable bit in said slot, said body having a seat parallel to said one side of the slot for receiving one edge of the bit, a wedge in said slot movable toward and away from the bottom of the slot to clamp and unclamp the bit against one side of the slot, the wedge having a seat for another edge of the bit, a pin slidable in said body below the bottom of the slot, a differential screw having one end screwed into the wedge and the other end screwed into the pin for moving the wedge toward and away from the bottom of the slot.

2. A milling cutter body having a rim and a bit receiving slot extending axially through the rim, an indexable bit in said slot, a seat in the bottom of the slot for one edge of the bit, a wedge extending toward the bottom of the slot, said wedge having a seat for another edge of the bit locating the bit on the wedge, a pin slidable in said body below the bottom of the slot, a differential screw having one end screwed into the wedge and the other end screwed into the pin for moving the wedge toward and away from the bottom of the slot, a clearance hole in the body for the screw whereby the wedge can be moved forward and backward in said slot when the screw is loosened.

4,164,381

FACING AND GROOVING TOOL

Norman H. Lovendahl, 814 Clinton, River Forest, Ill. 60305

Filed Aug. 15, 1977, Ser. No. 824,726
Int. Cl.[2] B27C 9/00
U.S. Cl. 408—20 **4 Claims**

1. A facing and grooving tool for use with a rotatable general purpose boring bar having at least one tool slot capable of receiving interchangeable tool blocks comprising:

a feed-out tool block compatible with the tool slot of the boring bar, the tool block including a fixed section securely fastenable in the tool slot of the boring bar by suitable means and a moveable tool section having a cutting tip, the moveable section being slideably mounted on the fixed section;

guide means restricting the moveable tool section to radial feed motion;

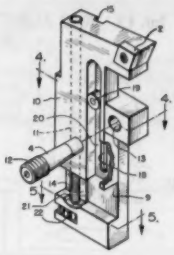
a feed-out actuator housing mountable on the boring bar, the housing having a circumferentially-disposed guideway;

an actuating rider retained by the circumferentially-disposed guideway;

an actuating member mounted on the rider;

a lever attached to the rider for holding it stationary while the bar and the rest of the tool rotate;

a drive screw threadably engaging the moveable tool section



for feed-out, the drive screw being rotatably connected to the fixed section; and

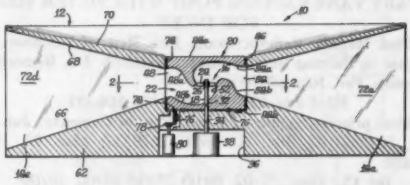
a drive gear attached to the end of the drive screw and extending into the circumferentially disposed guideway, the gear being engaged by the actuating member and being turned by it when the actuating rider is held stationary, whereby the moveable section is fed out.

4,164,382

WIND DRIVEN POWER APPARATUS

Karol J. Mysels, LaJolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Jul. 27, 1977, Ser. No. 819,363
Int. Cl.[2] F01D 1/08
U.S. Cl. 415—2 **24 Claims**



1. Apparatus for converting wind to mechanical energy comprising, in combination, fixed air guide means defining a plurality of outer air passages each of which is adapted to receive an air stream therein coming from a limited range of directions relative to said fixed air guide means, said air passages being adapted to increase the velocity of the air streams received therein and direct the increased velocity air streams to a predetermined location, converter means supported at said predetermined location for rotation about a fixed axis internally of said fixed air guide means, said converter means being adapted to receive said high velocity air streams from said outer air passages and convert said high velocity air to mechanical rotation, and means operatively associated with said fixed air guide means and adapted to selectively direct air from said outer air passages to said converter means so as to effect said conversion of high velocity air to mechanical rotation.

4,164,383
WATER WAVE ENERGY CONVERSION DEVICE USING FLEXIBLE MEMBRANES

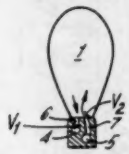
Michael J. French, United Kindgom Atomic Energy Authority, 11 Charles II St., London, United Kingdom (S.W.1)

Filed May 23, 1977, Ser. No. 799,524

Claims priority, application United Kingdom, May 26, 1976, 21768/76

Int. Cl.[2] **F04B** *35/00*

U.S. Cl. 417—330 **3 Claims**



1. A device for conversion of energy from water waves comprising an elongated flexible enclosure of impermeable material divided into compartments each containing gas, a high pressure gas conduit and a low pressure gas conduit, means for connecting each compartment to the gas conduits through non-return valves arranged to permit one way passage of gas from the compartment into the high pressure gas conduit and to permit one way passage of gas from the low pressure gas conduit into the compartment, a rigid elongated support structure to which the flexible enclosure material is attached with the enclosure extending upwards, in operation, from the line of attachment thereof to the rigid support with at least one side wall of the enclosure being free to flex laterally, the device being located for operation in water with the top of the flexible enclosure at or just below the surface such that each compartment is subjected in turn to an external pressure alternation as water waves pass along the device, and the pressures in the gases in the high pressure gas conduit and the low pressure gas conduit being respectively such that, for operation in response to the said external pressure alternation, gas is pumped when the external pressure is high from the compartment into the high pressure gas conduit by lateral collapse of the compartment and gas is pumped when external pressure is low from the low pressure gas conduit into the compartment.

4,164,384
ROTARY VANE VACUUM PUMP WITH FILTER MEANS FOR INLET

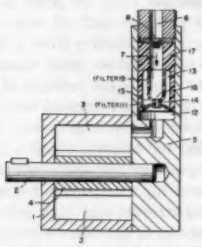
Siegfried Hertell, Radevormwald, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Jun. 13, 1977, Ser. No. 806,191

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1976, 7618891[U]; Jun. 30, 1976, 2629337; Mar. 22, 1977, 2712480

Int. Cl.[2] **F04C** *29/02;* **B01D** *27/00, 35/00, 50/00*

U.S. Cl. 418—47 **7 Claims**



1. In a rotary vane-type vacuum pump having a driven rotor element with vanes mounted thereon located within a casing which is sealed at one end by a cover plate, wherein the improvement comprises:

an inlet port formed in the front face of said cover plate which is divided into upper and lower connected chambers of differing capacities,

a first filter located at the connecting point between said chambers and extending across the cross-sectional area thereof,

a second cup-shaped filter suspension mounted in said upper chamber which is located, in an intake direction, ahead of said lower chamber, and

a check valve located in said upper chamber.

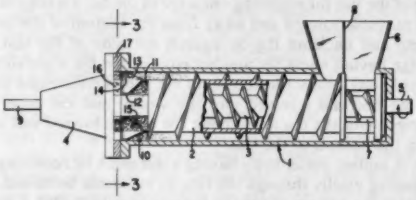
4,164,385
EXTRUDER WITH MIXING CHAMBERS

Friedhelm Finkensiep, Krefeld-Uerdingen, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,533

Int. Cl.[2] **B29F** *3/02*

U.S. Cl. 425—204 **3 Claims**



1. A single extruder provided with a hopper at one end and a restricted nozzle at the opposite end and two press-screws arranged coaxially in one another within an outer jacket, each of said screws being provided with a male thread for feeding in the direction of said nozzle, said male threads extending into an outer annular space between said jacket and the outer press-screw and extending into an inner annular space between said two press-screws, said threads being oppositely oriented, means to rotate the outer of said press-screws and means maintaining the inner of said two press-screws stationary, said outer press-screw being provided with window-like openings communicating with said inner press-screw in the area of said hopper and separate feed means in said hopper to separately feed to said outer annular space and to said inner annular space through said window-like openings, the improvement consisting in that a rotating mixing element is positioned between said nozzle and said press-screws and attached to said rotating outer press-screw and having outer bearing support means in sliding contact with said outer jacket and inner bearing support means in sliding contact with said inner stationary press-screw, said outer and said inner bearing means being supported from said attachment to said outer press-screw by radial walls, said mixing element being provided with a series of open conical chambers between said radial walls, the inlets of said open conical chambers alternately opened to said inner annular space and said outer annular space and the outlets of said open conical chambers opened to said restricted nozzle.

4,164,386

APPARATUS FOR PRODUCING SHEET MATERIAL

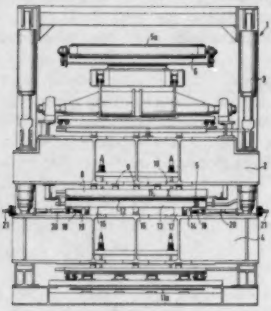
Gerhard Stäbler, Murr Kreis Ludwigsburg, Fed. Rep. of Germany, assignor to Sandvik Conveyor GmbH, Fellbach, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 916,542

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729938

Int. Cl.[2] B29C *3/00*

U.S. Cl. 425—371 7 Claims



1. In a twin-belt press which has two endless steel belts with coextensive belt runs which form a treatment zone therebetween, means to support said belt runs in predetermined spaced relationship including, a pressure plate structure which presents a surface which determines the position and contour of one of said belt runs, a second pressure plate structure which presents a surface which determines the position and contour of the other of said belt runs, means to provide rigid support for the longitudinal central portion of one of said pressure plate structures, and adjustable means to provide support for the respective longitudinal edge portions of said one of said pressure plate structures which includes means forming a wedge ramp extending toward said longitudinal central portion from adjacent one of said edge portions at an angle to a plane parallel to the desired plane of said belt runs and wedge means upon which a portion of said one of said pressure plate structure rests, said wedge means having a surface resting upon said ramp surface and mating therewith and means to adjust the position of said wedge means on said ramp surface whereby said portion of said one of said pressure plate structure is moved transversely of said desired plane.

4,164,387

APPARATUS FOR PRODUCING SHEET MATERIAL

Konrad Schermutzki, Remseck am Neckar, and Gerhard Stäbler, Murr Kreis Ludwigsburg, both of Fed. Rep. of Germany, assignors to Sandvik Conveyor GmbH, Fellbach, Fed. Rep. of Germany

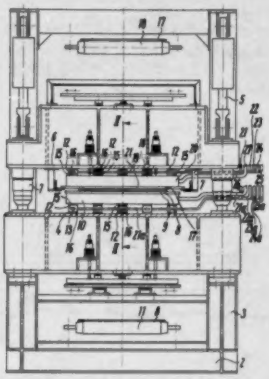
Filed Jun. 19, 1978, Ser. No. 916,543

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729559

Int. Cl.[2] B29C *3/00*

U.S. Cl. 425—371 7 Claims

1. In a twin-belt press wherein two endless belts are mounted to provide parallel belt runs which present coextensive belt surfaces between which there is a press-gap which comprises a treatment zone within which the material is compressed by opposing forces exerted on the material by said belt surfaces, and wherein it is desirable to control the dimension of said press-gap transversely of said coextensive belt surfaces, that improvement which comprises means to control said dimension of said press-gap including, pressure means positioned upon the opposite sides of said belt runs to exert said opposing forces urging said coextensive surfaces toward each other with a predetermined spaced relationship therebetween, thermal responsive means which changes in its dimension in the direction of said forces in response to changes in it temperature, and



means to control said temperature whereby increases and decreases in said temperature vary said dimension of said press-gap.

4,164,388

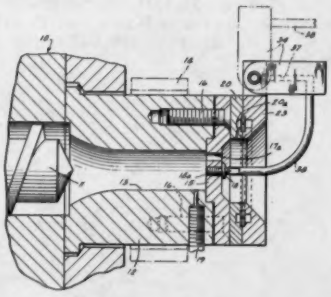
EXTRUSION DIE ASSEMBLY

Richard B. Inman, Dunwoody, Ga., and Ivan C. McCarty, Paris, Ky., assignors to International Spike, Inc., Lexington, Ky.

Filed Jun. 16, 1978, Ser. No. 916,291

Int. Cl.[2] B29C *23/00*

U.S. Cl. 425—378 R 7 Claims



1. An extrusion apparatus for extruding a pliable material comprising:

means defining an extrusion chamber,

means for introducing said pliable material into said extrusion chamber,

a die plate defining a plurality of circumferentially spaced extrusion orifices at one end of said extrusion chamber, and

air injection means for injecting air radially outwardly from the center of said die plate against the extruded materials issuing from said orifices.

4,164,389

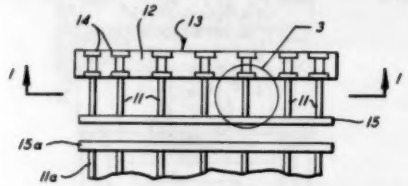
APPARATUS FOR FORMING EXPANDED PANELS

Donald R. Beasley, Bronxville, N.Y., assignor to Norfield Corporation, Danbury, Conn.

Division of Ser. No. 763,097, Jan. 27, 1977, Pat. No. 4,113,909. This application Jul. 5, 1978, Ser. No. 922,198

Int. Cl.[2] B29C *1/00, 17/00;* **B30B** *15/00*

U.S. Cl. 425—406 **10 Claims**



1. In a device for expanding the cross section of a blank of thermoformable material which includes a machine having first and second opposed press platens; means for controlling the spacing of the press platens, first and second molding plates; and means attaching the mold plates to the press plates, the improvement comprising the means attaching the press platens comprising:

(a) a plurality of elongated studs distributed over the area of the molding plates the length of said studs being such as to satisfy the equation: $D=C-\sqrt{C^2-X^2}$ where D equals one-half the maximum deviation permissable in panel thickness, C the length of the bolts and X the amount of thermal expansion in one half of the mold based on the mold material used and the temperature differential to be employed;

(b) means for attaching one end of each of said studs to a press platen; and

(c) means for attaching the other end of said studs to a mold plate.

4,164,390

BURNER FOR LIQUID FUEL

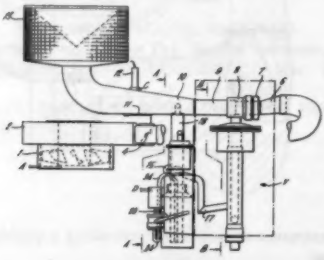
Jacques Bouvin, Saint Martin du Vivier, France, assignor to Esso Societe Anonyme Francaise, Paris, France

Filed May 11, 1977, Ser. No. 795,832

Claims priority, application France, May 11, 1976, 76 14155

Int. Cl.[2] F23D *5/00*

U.S. Cl. 431—75 **15 Claims**



1. A burner for burning liquid fuel comprising: a burner head at which the fuel is burned with air in a substantially stable flame; air supply means operable to supply a stream of combustion air at substantially atmospheric pressure; an air supply conduit comprising a mixing region and a divergent diffuser for conducting said stream of combustion air from said air supply means to the burner head during operation of said air supply means; means for supplying liquid fuel to said burner; a vapourizer for receiving said liquid fuel and converting said liquid fuel to fuel vapour remote from and out of contact with said combustion air stream and at a pressure at least equal to the operating pressure at said selected mixing region of the conduit, the vapourizer comprising liquid fuel heating means operable to vapourize said liquid fuel substantially at atmospheric pressure independently of the presence of any flame at the burner head; and a tube for conducting fuel vapour from the vapourizer to said selected mixing region of the conduit, being constructed and arranged relative to said conduit such that during operation the fuel vapour passes into said mixing region and is swept from said mixing region by said combustion air stream with which said fuel vapour mixes to form a substantially uniform mixture of air and fuel vapour in said conduit for subsequent burning at said burner head.

4,164,391

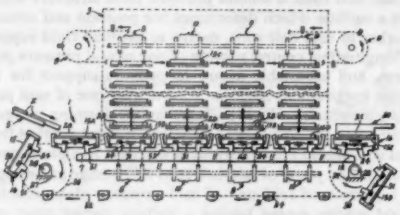
CONVEYOR FOR PROCESSING

Walter D. Howard, and David I. McDonald, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 17, 1978, Ser. No. 887,752

Int. Cl.[2] F27B *9/14*

U.S. Cl. 432—124 **13 Claims**



8. A conveyor of the endless type having means for clamping and releasing carrier trays that comprises

a pair of parallel and spaced aprt endless chains;

a plurality of annular rectangular frames connected to said chains at equally spaced-apart distances along each and having substantially flat upwardly facing support surfaces;

at least one clamping means mounted on each said frame to clamp and release a carrier tray means thereto;

a machine base from which said chains are supported to run longitudinally each in an endless path;

and a clamp actuator in the form of a fixed cam mounted on said base at a position to engage each of said clamping means seriatim to cause it to unclamp its tray at one position and to clamp its respective tray at another position;

said clamping means and clamp actuators coacting to hold the clamping means in an unclamped position over a certain part of the path of said chains and to cause said clamping means to move to an unclamped position during the other part of the path.

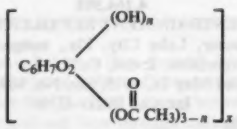
4,164,392

TEXTILE MATERIALS HAVING DURABLE SOIL RELEASE AND MOISTURE TRANSPORT CHARACTERISTICS AND PROCESS FOR PRODUCING SAME

Peter J. Hauser, Spartanburg, and Francis W. Marco, Pauline, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

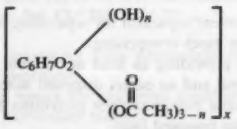
Filed Dec. 22, 1977, Ser. No. 863,281
Int. Cl.[2] D06P 5/00
U.S. Cl. 8—18 R 24 Claims

1. A process for imparting improved, durable soil release and moisture transport characteristics to a textile material formed of polyester or nylon fibers which comprises applying an effective amount of a liquid admixture consisting essentially of from about 0.001 to about 10 weight percent of a cellulose acetate polymeric constituent and a solvent constituent capable of solubilizing said cellulose acetate polymeric constituent, to provide a resulting wet textile material containing at least about 0.001 weight percent of said cellulose acetate polymeric constituent, said cellulose acetate polymeric constituent being characterized as having a degree of substitution of the acetyl moiety of from about 0.9 to about 2.3 and represented by the formula



wherein x is an integer of at least about 50, n is an integer of from about 2.1 to about 0.7 and the expression 3-n is the degree of substitution of the acetyl moiety, and drying the resulting wet textile material for a period of time effective to remove substantially all of the solvent constituent and provide a dry textile material containing said cellulose acetate polymeric constituent.

9. A process for imparting improved, durable soil release and moisture transport characteristics to a textile material formed of polyester fibers during a dyeing operation wherein the textile material is contacted with an aqueous dye admixture containing water, a dispersed dye stuff, a minor amount of acetic acid and a leveling agent which comprises incorporating into said aqueous dye admixture a minor effective amount of a cellulose acetate polymeric constituent so as to provide at least about 0.001 weight percent of said polymeric constituent on said textile material, said cellulose acetate polymeric constituent being characterized as having a degree of substitution of the acetyl moiety of from about 0.9 to about 2.3 and represented by the formula



wherein x is an integer of from about 100 to about 200, n is an integer of from about 2.1 to about 0.7 and the expression 3-n is the degree of substitution of the acetyl moiety; maintaining said textile material in contact with the dye admixture containing said cellulose acetate polymeric constituent under dyeing condition for a period of time effective to allow exhaustion of said dye stuff and said cellulose acetate polymeric constituent onto the textile material;

removing the dyed textile material from said dye admixture;

rinsing the dyed textile material; and

drying the dyed textile material containing the cellulose acetate polymeric constituent.

4,164,393

PRESERVATIVE FOR HIDES

Emma-Jane E. Drury, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 17, 1978, Ser. No. 897,064
Int. Cl.[2] C14C 1/00
U.S. Cl. 8—94.18 12 Claims

1. A composition for preserving animal hides in aqueous float comprising, based on the weight of hides, from about 1.0 to about 2.0% propionic acid, and from about 0.4% to about 1.0% sorbic acid.

5. A composition for preserving animal hides in aqueous float comprising, based on the weight of hides, from about 1.0 to about 1.5% propionic acid, and from about 0.4% to about 1.0% of a substance comprising about 40 to about 100 parts sorbic acid, about 1 to about 60 parts dehydroacetic acid, and about 1 to about 47 parts methyl paraben.

4,164,394

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, and Fred R. Scholer, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 10, 1978, Ser. No. 949,837
Int. Cl.[2] D06L 3/00
U.S. Cl. 8—107 14 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics characterized by treating them with an aqueous peroxygen bleaching solution having a pH of 6 to 12 and containing as a peroxygen activator therefor, an effective amount of an acylphosphonate.

4,164,395

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Joseph H. Finley, Metuchen, and John H. Blumbergs, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 16, 1978, Ser. No. 952,026
Int. Cl.[2] D06L 3/02; C11D 7/18
U.S. Cl. 8—111 13 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics characterized by treating them with an aqueous peroxygen bleaching solution having a pH of 6 to 12 and containing as a peroxygen activator therefor, an effective amount of a sulfonyloxime.

4,164,396

PRODUCTION OF COMBUSTIBLE PRODUCTS FROM WASTE MATERIALS

Brian Jones, Over Hulton near Bolton, England, assignor to The General Engineering Company (Radcliffe) Limited, Manchester, United Kingdom

Continuation-in-part of Ser. No. 711,548, Aug. 4, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,556
Claims priority, application United Kingdom, Apr. 28, 1976, 17169/76
Int. Cl.[2] C10L 5/46, 5/22
U.S. Cl. 44—1 D 7 Claims

1. A method of producing a fuel derived from waste material including the steps of: combining refuse containing fibrous material of low wet strength and of a primarily combustible nature and also containing material of greater strength and density, including non-combustible material, with liquid combustible material to enhance the calorific value of the refuse, feeding the refuse and the liquid combustible material into a rotary drum in which the refuse is tumbled gradually to reduce the refuse to particulate form and in which the resistance to breakdown of at least the fibrous material is reduced by the dispersal thereover of the liquid combustible material; regulating the quantity of the refuse fed to the drum so that free space

exists in the drum to ensure that the refuse can tumble freely therein as the drum is rotated, rotating the drum so that reduction to particulate form of the fibrous material of low wet strength of the refuse is assisted by collision and intermingling thereof with said pieces of non-combustible materials of greater strength and density thereby to produce a homogenised, discrete particulate mass, removing the mass from the drum, and removing from the mass at least large pieces of non-combustible material which are contained in the originally supplied refuse thereby to produce an air permeable, particulate fuel of substantially constant density, particle size and calorific value.

6. A method as set forth in claim 1 including the step of passing said mass removed from said drum through a separator, separating a granulated fraction from a non-granulated fraction, passing said granulated fraction to a classifier, blowing air through said classifier and separating low density particles from higher density particles thereby to produce two grades of fuel.

4,164,397

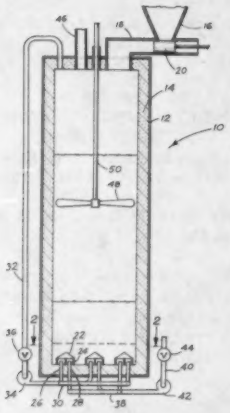
FUEL GAS PRODUCTION

Herbert H. Hunt, 3608 Vine Maple, Eugene, Oreg. 97405, and Harold S. Worcester, 91040 Hill Rd., Springfield, Oreg. 97417

Continuation-in-part of Ser. No. 733,429, Oct. 18, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,422

Int. Cl.[2] C10J *3/16*

U.S. Cl. 48—209 **3 Claims**



1. A process for making conbustible gas from lignocellulose material which comprises

establishing a descending bed of such material in a descending bed reactor, newly introduced material being dropped onto the top of such bed and such newly introduced material having a moisture content within the range of 20% to 80% by weight,

said descending bed having adjacent the top thereof a drying zone wherein the material is dried with the production of water vapor, and progressing downwardly from the drying zone a distillation zone where the material is converted to gaseous hydrocarbons and char, and below the distillation zone a combustion zone where the char is reacted with the production of additional gas and residual ash,

channeling the ash and all of the gas as such is produced in said bed upwardly through and thence out the top of the bed with the sensible heat of such gas being transferred directly to the material in the bed,

dividing gas flowing upwardly from the top of said bed into one fraction which is the gas manufactured and another fraction which is reflow gas, said reflow gas comprising the water vapor, gaseous hydrocarbons, and said additional gas produced in the combustion zone,

forming a cavity within said bed in the combustion zone thereof, and

contacting the material in said bed in said combustion zone with the reflow gas together with air for the support of combustion, the air and reflow gas before contacting such material initially being mixed in said cavity to produce a mixture comprising air, water vapor and gaseous hydrocarbons,

the combustion zone being maintained at a temperature above about 1300° F. and below the fusion temperature of the ash of said material, said additional gas produced in said combustion zone comprising the gas combustion product produced by the exothermic reaction of char with oxygen supplied by the air and water gas produced by the endothermic reaction of char with water vapor in a water-gas reaction, the top of said bed being maintained at a temperature no higher than the boiling point of water at the pressure condition existing in the reactor.

4,164,398

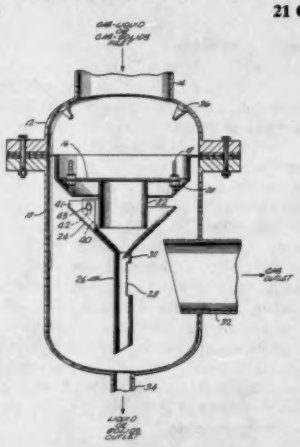
ENTRAINMENT SEPARATOR

Michael B. Caesar, Lake City, Fla., assignor to Occidental Research Corporation, Irvine, Calif.

Filed May 26, 1978, Ser. No. 909,898

Int. Cl.[2] B01D *45/08*

U.S. Cl. 55—186 **21 Claims**



1. An entrainment separator for separating liquids from gases and solids from gases comprising:

a. a housing providing an inlet at one end, an outlet at the opposed end and an outlet disposed along the side;

b. an adjustable planar surface providing a face facing the inlet and an opposed face;

c. an annular deflector beneath the planar surface, attached to the housing and extending inward of the housing and positioned relative to the planar surface to provide an opening between the planar surface and annular deflector;

d. means to adjust the position of the planar surface relative to the annular deflector;

e. a tube attached to the opposed face of the planar surface and extending downward of the inlet;

f. a funnel providing a downward extending spout positioned below the tube; and

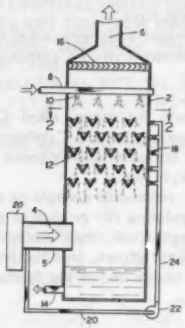
g. means providing flow of liquid in the funnel past the tube and to the spout.

4,164,399

WET SCRUBBING DEVICE

David H. Kannapell, Prospect, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Sep. 28, 1977, Ser. No. 837,359
Int. Cl.[2] B01D *47/06, 47/12*
U.S. Cl. 55—223 **6 Claims**



1. A wet scrubbing apparatus for cleaning a waste gas comprising:

a scrubber housing having a flow-through inlet and a flow-through outlet; a plurality of transversely extending troughs mounted within said housing between said flow-through inlet and said flow-through outlet, said plurality of troughs equally spaced in a plurality of horizontally aligned rows with alternating rows being vertically aligned and said troughs in adjacent rows being spaced equidistant between said troughs of adjacent rows; means to add a scrubbing solution to said troughs; and, means to force said scrubbing solution out of said troughs including a first conduit disposed along the bottom of each of said troughs with spaced preselected openings therein in fluid communication with a pressurized fluid source so that the scrubbing solution overflowing from row to row of said troughs creates fluid sheets caught by said troughs in rows adjacently below overflowing troughs, whereby the waste gas to be cleaned must pass through the liquid sheets of scrubbing solution as the waste gas to be cleaned passes through said housing from said flow-through inlet to said flow-through outlet.

4,164,400

FILTERS

Stephen A. Wald, Winston-Salem, N.C., assignor to Scott/Chatham Company, Hamptonville, N.C.

Filed Dec. 21, 1976, Ser. No. 752,884
Int. Cl.[2] B01D *46/00*
U.S. Cl. 55—382 **42 Claims**

1. A filter for separating solid particulate matter from a suspending gas, comprising:

(1) an enclosure means for enclosing a volume of gas suspended solid particulate matter;

(2) an intake means associated with the enclosure means for passing gas suspended solid particulate matter into the enclosure means; and

(3) a filter means associated with the enclosure discharge means for passing gas from the enclosure means; said filter means comprising a non-woven needled textile filter fabric having at least 5000 needle punches per square inch on an all-fiber basis:

(a) a face surface associated with the intake means and a back surface associated with the discharge means;

(b) an overall bulk density of at least 6 pounds per cubic foot;

(c) a bulk density gradient such that the bulk density at the face surface is at least 50% greater than the bulk density at the back surface;

(d) a filtering gradient such that the fineness of filtration at the face surface is greater than the fineness of filtration at the back surface;

(e) a gas permeability of at least 3 CFM per square foot at a pressure drop of 0.5 inch of water; and

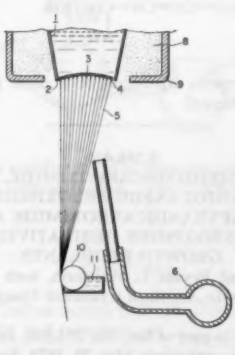
(f) a fineness of filtration such that the dynamic leakage is 7.0% or less.

4,164,401

CURVED ORIFICE PLATE FOR FORMING GLASS FIBERS

Toshio Noji; Hiroaki Shono, and Isao Wakasa, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Continuation of Ser. No. 808,948, Jun. 22, 1977, abandoned.
This application Sep. 21, 1978, Ser. No. 944,535
Claims priority, application Japan, Jun. 30, 1976, 51/77420
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—1 **6 Claims**



1. In a glass filament forming bushing including a molten glass container having a bottom plate provided with a plurality of closely spaced filament withdrawal non-tip orifices, and means to direct a flow of cooling air to the outer surface of the bottom plate, the improvement characterized by:

the bottom plate being inwardly curved in a concave manner to increase its resistance to outward deformation as a consequence of the loading thereon from the weight of molten glass in the container and the tension resulting from the withdrawn filaments, said bottom plate having a uniform radius of curvature in the range of 35 mm to 200 mm and the angle between the axis of an outermost orifice therein and the direction of withdrawal of a filament drawn therethrough is less than 15°.

4,164,402
STRENGTHENING OF THIN-WALLED, LIGHT GLASS CONTAINERS

Muneo Watanabe, Nishinomiya, Japan, assignor to Yamamura Glass Co., Ltd., Nishinomiya, Japan

Filed Feb. 27, 1978, Ser. No. 881,257
Int. Cl.[2] C03C *15/00, 17/00, 21/00*
U.S. Cl. 65—30 E **6 Claims**

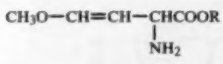
1. In a process for strengthening thin-walled, light containers made of soda-lime glass comprising the steps of molding said containers by the press-and-blow process, annealing the glass containers and thereafter exchanging sodium ions present in the surface portion of the external surface and the internal surface of said containers with potassium ions to form a compressive stress layer in said surface portion, the improvement which comprises the pretreatment step of placing a compound selected from the group consisting of elemental sulfur, sulfur dioxide, ammonium chloride, ammonium sulfate, aluminum chloride, water, a fluorine-containing substance and a mixture thereof into the interior of said containers immediately after the molding step but before the annealing step at an elevated temperature so that only said internal surface of said containers reacts with the gas generated from said compound at said elevated temperature to decrease the amount of extractable alkali on said internal surface.

4,164,403
METHOD FOR INHIBITING PLANT GROWTH

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 6, 1978, Ser. No. 912,916
Claims priority, application Switzerland, Jun. 9, 1976, 7252/76; Jun. 10, 1977, 7172/77
Int. Cl.[2] A01N *5/00*
U.S. Cl. 71—76 **4 Claims**

1. A method for inhibiting vegetative plant growth which comprises treating emerged plants with a non-phytotoxic effective amount of an active substance of the formula I



(I)

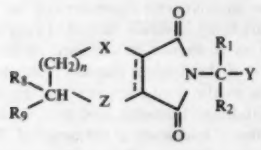
wherein R represents hydrogen or a plant physiologically acceptable salt thereof.

4,164,404
DITHIINDICARBOXIMIDE, DITHIOLANEDICARBOXIMIDE, THIAPYRANDICARBOXIMIDE AND PYRANDICARBOXIMIDE DERIVATIVES AS PLANT GROWTH REGULANTS

Marinus Los, and Bryant L. Walworth, both of Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

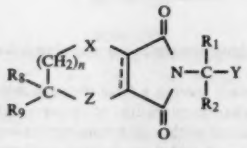
Continuation-in-part of Ser. No. 373,556, Jun. 25, 1973, abandoned. This application May 30, 1974, Ser. No. 474,760
Int. Cl.[2] A01N *5/00, 21/02;* **C07D** *495/04, 493/04;* **A01N** *21/00*
U.S. Cl. 71—77 **49 Claims**

1. A compound of the formula:



wherein
X is CH_2 or S;
Z is S, O, or SO, provided that when Z is O, X cannot be S;
Y is $—COOR_3$, $—CONR_4R_5$, —CONHOH, $—CONHNR_6R_7$, $—CONHN^{\oplus}R_6R_7R_7 \bullet halide^{\ominus}$, CN or $—COR_{10}$;
n is 0 or 1; R_1 and R_2 each represent alkyl C_1–C_4, or when taken together with the carbon to which they are attached form cycloalkyl C_4–C_8 or methyl-substituted cycloalkyl C_4–C_9;
R_3 is hydrogen or alkyl C_1–C_4;
R_4 and R_5 each represent hydrogen, alkyl C_1–C_4, phenyl, monohalophenyl, monoalkyl(C_1–C_4)phenyl, or monoalkoxy(C_1–C_4)phenyl;
R_6 and R_7 are alkyl C_1–C_2;
R_8 is mononitrophenyl hydrogen, alkyl C_1–C_4, phenyl, monohalophenyl, monoalkyl(C_1–C_4)phenyl, monoalkoxy(C_1–C_4)phenyl or trifluoromethylphenyl;
R_9 is hydrogen or alkyl C_1–C_4;
R_{10} is halogen, and represents a single or double bond.

18. A method for regulating the growth of plants comprising, applying to the foliage, roots, stems, seeds seed pieces or to soil in which the plants are grown, an effective plant growth regulating amount of a compound of the formula:



wherein
X is CH_2 or S;
Z is S, O, or SO, provided that when Z is O, X cannot be S;
Y is $COOR_3$, $—CONR_4R_5$, —CONHOH, $—CONHNR_6R_7$, $—CONHN^{\oplus}R_6R_7R_7 \bullet halide^{\ominus}$, or CN; n is 0 or 1;
R_1 and R_2 each represent alkyl C_1–C_4, or when taken together with the carbon to which they are attached form cycloalkyl C_4–C_8 or methyl-substituted cycloalkyl C_4–C_9;
R_3 is alkyl C_1–C_4;
R_4 and R_5 each represent hydrogen, alkyl C_1–C_4, phenyl, monohalophenyl, monoalkyl(C_1–C_4)phenyl, or monoalkoxy(C_1–C_4)phenyl;
R_6 and R_7 are alkyl C_1–C_2;
R_8 is hydrogen, alkyl C_1–C_4, phenyl, monohalophenyl, monoalkyl(C_1–C_4)phenyl, monoalkoxy(C_1–C_4)phenyl or trifluoromethylphenyl;
R_9 is hydrogen or alkyl C_1–C_4;
and represents a single or double bond.

4,164,405
METHOD OF CONTROLLING THE RATE OF DAMPING-OFF OF PLANT SEEDLINGS AND IMPROVING THE RATE OF TREE GROWTH WITH TREATED COTTON GIN WASTE

Joseph A. Pinckard, Inglis, Fla., assignor to The Ekol Corporation, Ocala, Fla.

Continuation-in-part of Ser. No. 544,669, Jan. 27, 1975, abandoned. This application Mar. 20, 1978, Ser. No. 887,963
Int. Cl.[2] A01N *9/08*
U.S. Cl. 71—79 **15 Claims**

8. A method for improving the rate of tree growth which comprises placing about the locus of a tree a horticultural medium in an amount effective to improve the rate of growth of said tree, said horticultural medium having been produced by the process of aerobically fermenting cotton gin waste to biodegrade the waste at a temperature of at least 125° F. with water in an amount ranging from 1 to 5 times the dry weight of the gin waste, said gin waste being in a pile at least 10 feet wide and 8 feet high to conserve self-generated heat in the interior of the pile, and systematically turning the exterior of the pile to the interior so that all particles of the gin waste are heated to

a temperature of from 125° to 180° F. for at least several hours, whereby the gin waste is freed of any soil borne plant diseases, weed seeds, insects or nematodes present therein.

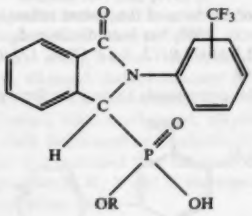
4,164,406

PHOSPHINYLPHTHALIMIDINES AND THEIR USE AS PLANT GROWTH REGULANTS

Wendel G. Phillips, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

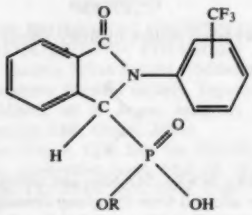
Filed Jul. 11, 1975, Ser. No. 596,027
Int. Cl.[2] A01N *9/36, 9/00;* **C07D** *209/34*
U.S. Cl. 71—86 **15 Claims**

1. A compound having the formula



wherein R is hydrogen or lower alkyl.

7. A method of regulating the growth of dicotyledanous plants which comprises treating said plant with an effective non-lethol amount of a compound having the formula



wherein R is hydrogen or lower alkyl.

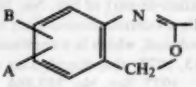
4,164,407

BENZOXAZINE HERBICIDES

Stewart W. Myers, Morristown, and Homer K. Spencer, Randolph, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Filed Oct. 7, 1977, Ser. No. 840,227
Int. Cl.[2] A01N *9/22;* **C07D** *265/18*
U.S. Cl. 71—88 **20 Claims**

1. A method of combatting plants in a plant locus, which comprises applying to the locus a herbicidally effective amount of a compound which is a free base of the formula:

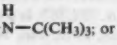


wherein each of A and B, is independently, a hydrogen atom or halo having an atomic weight of from about 34 to 80, provided that A and B are not both hydrogen atoms; and R^0 is a member of the class consisting of either:

(A) tertiary-amino of the formula:

wherein each of R^1 and R^2, independently, is alkyl having from 1 to 6 carbon atoms, or alkenyl having from 3 to 6 carbon atoms, provided that the ethylenically unsaturated bond is not on the carbon atom adjacent to the nitrogen atom; or

(B) secondary amino of the formula:



an acid addition salt thereof.

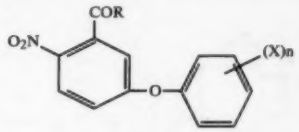
4,164,408

SALTS OF SUBSTITUTED PHENOXYBENZOIC ACIDS, COMPOSITIONS OF THE SAME AND HERBICIDAL USE THEREOF

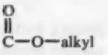
Robert J. Theissen, Bridgewater, N.J., assignor to Mobil Oil Corp., New York, N.Y.

Continuation of Ser. No. 702,367, Jul. 2, 1976, which is a continuation-in-part of Ser. No. 617,569, Sep. 29, 1975, Pat. No. 3,979,437, which is a continuation of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830, which is a continuation of Ser. No. 114,712, Feb. 11, 1971, Pat. No. 3,784,635, which is a continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645, said Ser. No. 702,367, is a continuation-in-part of Ser. No. 545,232, Jan. 29, 1975, Pat. No. 4,002,662, which is a continuation-in-part of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830. This application Sep. 26, 1977, Ser. No. 836,885 The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.
Int. Cl.[2] A01N *9/12, 9/14;* **C07C** *121/64, 65/00*
U.S. Cl. 71—98 **3 Claims**

1. Herbicidal compounds having the formula:



wherein X is a member selected from the group consisting of halogen, nitro, trifluoromethyl, cyano, COOH,



(alkyl of 1 to 4 carbon atoms), hydroxy, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms,

SH, SR_1, SOR_1, SO_2R_1, SO_2NH_2 and combinations thereof, R_1 and R_2 are selected from the group consisting of alkyl of 1 to 4 carbon atoms, R is OM in which M is an alkali metal (lithium, sodium and potassium), alkylammonium of 1 to 4 carbon atoms or alkanolammonium of 1 to 4 carbon atoms, n is an integer of 1 to 5.

2. The method for controlling plant growth that comprises applying an herbicidal amount of a compound defined in claim 1.

4,164,409

SUBSTITUTED PHENOXYBENZOIC ACIDS, COMPOSITIONS OF THE SAME AND HERBICIDAL USE THEREOF

Robert J. Theissen, Bridgewater, N.J., assignor to Mobil Oil Corp., New York, N.Y.

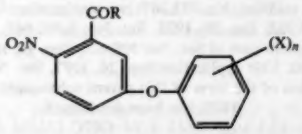
Continuation of Ser. No. 837,957, Sep. 29, 1977, which is a continuation of Ser. No. 702,367, Jul. 2, 1976, which is a continuation-in-part of Ser. No. 617,569, Sep. 29, 1975, Pat. No. 3,979,437, which is a continuation of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830, which is a continuation of Ser. No. 114,712, Feb. 11, 1971, Pat. No. 3,784,635, which is a continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645, said Ser. No. 702,367, is a continuation-in-part of Ser. No. 545,232, Jan. 29, 1975, Pat. No. 4,002,662, which is a continuation-in-part of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830. This application May 5, 1978, Ser. No. 903,271

The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

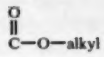
Int. Cl.[2] A01N *9/12, 9/14;* **C07C** *121/64, 65/00*

U.S. Cl. 71—98 **3 Claims**

1. Herbicidal compounds having the formula:



wherein X is a member selected from the group consisting of halogen, nitro, trifluoromethyl, cyano, COOH,



(alkyl of 1 to 4 carbon atoms), hydroxy, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms,

SH, SR_1, SOR_1, SO_2R_1, SO_2NH_2 and combinations thereof, R_1 and R_2 are selected from the group consisting of alkyl of 1 to 4 carbon atoms, R is hydroxy, and n is an integer of 1 to 5.

2. The method for controlling plant growth that comprises applying an herbicidal amount of a compound defined in claim 1.

4,164,410

ESTERS OF SUBSTITUTED PHENOXYBENZOIC ACIDS, COMPOSITIONS OF THE SAME AND HERBICIDAL USE THEREOF

Robert J. Theissen, Bridgewater, N.J., assignor to Mobil Oil Corp., New York, N.Y.

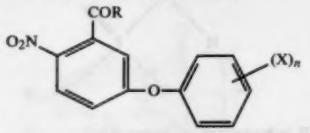
Continuation of Ser. No. 837,957, Sep. 29, 1977, which is a continuation of Ser. No. 702,367, Jul. 2, 1976, which is a continuation-in-part of Ser. No. 617,569, Sep. 29, 1975, Pat. No. 3,979,437, which is a continuation of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830, which is a continuation of Ser. No. 114,712, Feb. 11, 1971, Pat. No. 3,784,635, which is a continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645, said Ser. No. 702,367, is a continuation-in-part of Ser. No. 545,232, Jan. 29, 1975, Pat. No. 4,002,662, which is a continuation-in-part of Ser. No. 398,610,. This application May 5, 1978, Ser. No. 903,366

The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

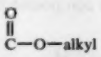
Int. Cl.[2] A01N *9/12, 9/14;* **C07C** *121/64, 79/46*

U.S. Cl. 71—98 **3 Claims**

1. Herbicidal compounds having the formula:



wherein X is a member selected from the group consisting of halogen, nitro trifluoromethyl, cyano, COOH,



(alkyl of 1 to 4 carbon atoms), hydroxy, alkoxy of 1 to 4 carbon atoms,

SH, SR_1, SOR_1, SO_2R_1, SO_2NH_2 and combinations thereof, R_1 and R_2 are selected from the group consisting of alkyl of 1 to 4 carbon atoms, R is alkoxy of 1 to 5 carbon atoms, n is an integer of 1 to 5.

2. The method for controlling plant growth that comprises applying an herbicidal amount of a compound defined in claim 1.

4,164,411

Patent Not Issued For This Number

4,164,412

PERFLUOROALKYLSULFONAMIDOARYL COMPOUNDS

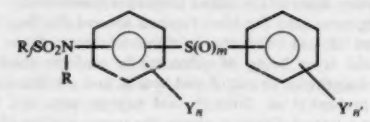
George G. I. Moore, Birchwood, and Joseph K. Harrington, Edina, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 460,883, Apr. 15, 1974, Pat. No. 4,005,141, which is a continuation-in-part of Ser. No. 268,661, Jul. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 118,476, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 28,148, Apr. 13, 1970, abandoned. This application Jan. 10, 1977, Ser. No. 757,884

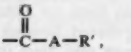
Int. Cl.[2] A01N *9/14, 9/12*

U.S. Cl. 71—103 **8 Claims**

1. A method for controlling, destroying or otherwise modifying the growth of higher plants which comprises contacting the said plants with an effective amount of a compound of the formula



wherein R_f is a lower perfluoroalkyl radical having one or two carbon atoms, R is hydrogen, cyano, alkyl, alkylsulfonyl, a horticulturally acceptable cation or



where R′ is alkyl and A is oxygen or a carbon-carbon bond, m is 0-2, Y is halogen, alkyl, alkoxy, cyano, nitro, amino, alkanamido, hydroxy, dialkylamino, alkoxycarbamoyl, alkylthio, alkylsulfonyl, alkanoyl, dialkylsulfamoyl or alkylsulfinyl, Y′ is fluorine, alkyl, alkoxy, cyano, nitro, amino, alkanamido, hydroxy, dialkylamino, alkoxycarbamoyl, alkylthio, alkylsulfonyl, alkanoyl, dialkylsulfamoyl or alkylsulfinyl and n and n′ are independently 0-2 provided that the individual aliphatic groups appearing in the R, R′, Y and Y′ moieties contain from one to four carbon atoms each.

4,164,413

METHOD FOR PROMOTING GROWTH OF PLANTS WITH CATIONIC POLYMERS

Naoyoshi Jinno, Ibaraki; Takeo Satomi, Nishinomiya; Shigenao Kawakami, Hirakata; Tatsumi Shibata, Toyonaka, and Shinichi Isaoka, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

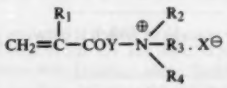
Filed May 4, 1978, Ser. No. 902,692

Claims priority, application Japan, May 23, 1977, 52-60269

Int. Cl.[2] A01N *5/00;* **C05F** *7/00*

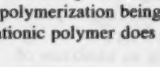
U.S. Cl. 71—103 **9 Claims**

1. A method for promoting the growth of plants comprising contacting the plants with an effective amount of a water-soluble cationic polymer obtained by polymerization of a quarternary ammonium compound of the formula (I) alone or together with at least one of other vinyl monomers, the formula (I) being



(I)

wherein R_1 is hydrogen or methyl, R_2 and R_3 are each an alkyl having 1 to 4 carbon atoms, R_4 is an alkyl having 1 to 4 carbon atoms, allyl, a hydroxyalkyl having 1 to 3 carbon atoms, benzyl or $-CH_2COO(CH_2)_mCH_3$ group (in which m is 0 or 1), x is a halogen or methylsulfate and Y is $-O(CH_2)_n-$, $-NH-(CH_2)_n-$ (in which n is 1 to 4) or



the other vinyl monomers being water soluble or hydrophobic, and the degree of copolymerization being within such a range that the produced cationic polymer does not lose solubility in water.

4,164,414

N-METHYLCARBANILIC-[3-(ETHOXYCARBONYLAMINO)-PHENYL]-ESTER AS A COTTON HERBICIDE

Friedrich Arndt, and Gerhard Boroschewski, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,492

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1976, 2608473

Int. Cl.[2] A01N *9/20;* **C07C** *79/46*

U.S. Cl. 71—111 **3 Claims**

1. N-methylcarbanilic-[3-(ethoxycarbonylamino)-phenyl]-ester having cotton-herbicidal action.

2. A composition for the control of weed growth in cotton fields consisting essentially of the compound of claim 1 as the active ingredient in an amount sufficient to substantially prevent the growth of weeds without causing substantial damage to the cotton plants together with an inert carrier.

4,164,415

BRANCHED ALKYL-2-NAPHTHALENEACETIC ACIDS AS HERBICIDES AND INSECTICIDE INTERMEDIATES

Venkataraman Kamesaran, Pennbrook, Pa., and Roger W. Addor, Pennington, N.J., assignors to American Cyanamid Co., Stamford, Conn.

Filed Apr. 2, 1976, Ser. No. 673,245

Int. Cl.[2] A01N *9/24;* **C07C** *63/36*

U.S. Cl. 71—114 **3 Claims**

1. The compound α-isopropyl-2-naphtheneacetic acid.

4,164,416

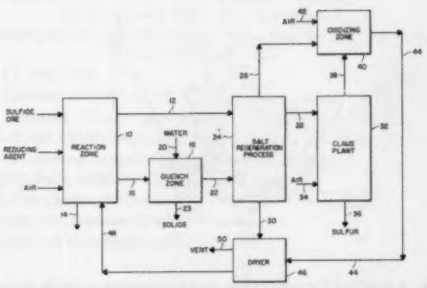
METAL RECOVERY PROCESS

Dennis C. Gehri, Agoura, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 752,218, Dec. 20, 1976, abandoned. This application Jul. 17, 1978, Ser. No. 925,665

Int. Cl.[2] C22B *13/00, 15/00*

U.S. Cl. 75—72 **11 Claims**



1. A process for the recovery of a metal selected from the group consisting of copper and lead from its respective sulfide ore, said process being performed under conditions resulting in substantially reduced emission of environmental pollutants, comprising:

(a) providing a reaction zone;

(b) introducing said sulfide ore containing from about 20 to 85 wt % of the selected metal, a carbonaceous material, an alkali metal carbonate and gaseous oxygen into said reaction zone to form a molten reaction mixture, said alkali metal carbonate and sulfide ore being introduced in amounts to provide a molar ratio of carbonate to metal sulfide of at least 1.2:1;

(c) said carbonaceous material being introduced in an amount sufficient to reduce substantially all of the selected metal sulfide to the elemental form of the metal and in a

sufficient excess os that there is generated in situ substantially all the heat required to maintain the reaction zone at a selected temperature between 600° and 1350° C;

(d) maintaining the reaction zone at said selected temperature for a time sufficient for a reaction to occur in the mixture between the selected metal sulfide, the carbonaceous material and the alkali metal carbonate to form a desired amount of the selected metal in its elemental form in the molten state in a single stage, said molten metal settling to the bottom of the reaction zone; and

(e) withdrawing the formed molten metal from the reaction zone as a flowable liquid substantially free of impurities.

4,164,417

PROCESS FOR RECOVERY OF NIOBIUM VALUES FOR USE IN PREPARING NIOBIUM ALLOY PRODUCTS

Robert A. Gustison, Reading, Pa., assignor to Kawecki Berylco Industries, Inc., Boyertown, Pa.

Filed Apr. 28, 1978, Ser. No. 901,069
Int. Cl.[2] C22B *34/24;* C22C *27/02*
U.S. Cl. 75—84 **10 Claims**

1. A process which comprises reducing niobium oxyfluoride in the presence of iron, chromium or nickel with aluminum and recovering the resulting niobium alloys.

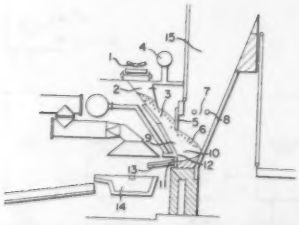
3. The process according to claim 1 wherein oxides of calcium, strontium, barium, magnesium and lithium are added to react with essentially all the fluorine contained in the niobium oxyfluoride.

4,164,418

METHOD OF RECOVERING VALUABLE METALS FROM ZINC BEARING MATERIALS AND BLAST FURNACE RELEVANT THERETO

Hiroshi Tokunaga, Tokyo; Yoshikazu Tatehana, and Akira Umekawa, both of Ohmuta, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Division of Ser. No. 710,465, Aug. 2, 1976, Pat. No. 4,071,228.
This application Sep. 21, 1977, Ser. No. 835,338
Int. Cl.[2] C22B *19/08*
U.S. Cl. 75—88 **10 Claims**



1. A method for separating and recovering volatile valuable metals including zinc and non-volatile valuable metals from zinc-bearing materials, utilizing a blast furnace comprising a horizontally elongated hearth whose upper surface is inclined downwardly relative to the horizontal in the lengthwise direction of said hearth toward tap hole means and an array of tuyeres disposed in horizontally spaced-apart relation along the lengthwise extent of said hearth and disposed closely above said upper surface of said hearth, said array of tuyeres being inclined relative to the horizontal at substantially the same angle as said upper surface of said hearth, which comprises the steps of: feeding briquettes of said zinc-bearing material containing carbonaceous material admixed therewith through a coking zone which communicates with said blast furnace and in said coking zone heating the briquettes by contact with hot

(A) a photocurable composition containing a member selected from the group consisting of

(a) a polymer selected from the group consisting of polywaste gas flowing upwardly from said blast furnace; then flowing a thin layer of the coked briquettes downwardly from the coking zone into the blast furnace toward the hearth to form a bed of said briquettes in a reaction zone above said hearth, said layer being of substantially uniform thickness along the lengthwise extent of said hearth, and simultaneously blowing preheated air through said tuyeres into said blast furnace in a lateral direction above the upper surface of said hearth so that the zinc in said zinc-bearing material is reduced to zinc metal and is evaporated and non-volatile materials present in said zinc-bearing material become molten and collect on said hearth and flow toward said tap hole means and simultaneously are contacted by the preheated air supplied through said tuyeres to form an agitated melt from which volatile metals are evaporated; flowing the vaporized volatile metals upwardly through said blast furnace and recovering said metals outside said furnace.

4,164,419

POWDERED ALLOY FOR DENTAL AMALGAM

Hiroyuki Kaji, and Narishige Suzuki, both of Kyoto, Japan, assignors to Shofu Dental Manufacturing Company, Limited, Kyoto, Japan

Continuation of Ser. No. 742,454, Nov. 17, 1976, abandoned.
This application Mar. 27, 1978, Ser. No. 890,307
Claims priority, application Japan, Dec. 22, 1975, 50-153664
Int. Cl.[2] C22C *7/00, 5/06*
U.S. Cl. 75—169 **4 Claims**

1. An amalgamable alloy for a dental amalgam consisting essentially, by weight, of at least 50% silver, 20 to 30% tin, 3 to 6% indium and 11 to 20% copper, said copper being present in an amount sufficient to form the intermetallic compound Cu_6Sn_5 with the tin and to provide only minimal amounts of unalloyed tin to form the gamma-II phase upon amalgamation.

4,164,420

MASTER ALLOY FOR THE PREPARATION OF ZIRCONIUM ALLOYS

Marcel Armand, and Daniel Charquet, both of Albertville, France, assignors to Ugine Aciers, Paris, France

Filed Dec. 8, 1977, Ser. No. 858,645
Claims priority, application France, Jan. 7, 1977, 77 00944
Int. Cl.[2] C22C *13/00*
U.S. Cl. 75—175 R **5 Claims**

1. A zirconium containing master alloy for producing zirconium-based alloys, said master alloy comprising by weight alloying elements of a percentage by weight generally greater than that of the zirconium-based alloys to be produced, and consisting essentially of by weight about:

Sn 50 to 85%
Zr 5 to 30%
Fe 0 to 20%
Cr 0 to 20%

the combined Fe + Cr content of which is between about 3 and about 30%.

4,164,421

PHOTOCURABLE COMPOSITION CONTAINING AN O-QUINONODIAZIDE FOR PRINTING PLATE

Fumiaki Shinozaki, and Tomoaki Ikeda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 531,125, Dec. 9, 1972, abandoned. This application Dec. 29, 1976, Ser. No. 755,308
Claims priority, application Japan, Dec. 7, 1973, 48/139233
Int. Cl.[2] G03G *5/18*
U.S. Cl. 96—33 **9 Claims**

1. A process for preparing a printing plate which comprises:

(1) imagewise exposing to such an exposure amount so that a positive working image can be obtained with actinic light in the visible to ultraviolet range a positive type photosensitive material comprising a support having thereon a photosensitive layer comprising an admixture of:

β-cinnamoyloxyethyl methacrylate, copolymers of β-cinnamoyloxyethyl methacrylate and methacrylic acid, and condensation products of p-phenylenediacrylic acid and 1,4-bis(β-hydroxyethoxy)cyclohexane,

(b) pentaerythritol tetraacrylate

(c) a mixture of said polymer (a) and said pentaerythritol tetraacrylate, and

(B) a photosensitive o-quinonediazide compound selected from the group consisting of esters of polyhydroxyphenyl comprising the polycondensation product of acetone and pyrogallol, and o-naphthoquinonediazide sulfonic acid in an amount of about 0.05 to about 4 parts by weight per part by weight of said photocurable composition (A),

(2) developing with a developer comprising an alkaline aqueous solution, and

(3) exposing said developed printing plate overall with actinic light in the visible to ultraviolet range to cure the formed image of said photo-curable composition (A).

4,164,422

WATER DEVELOPABLE, PHOTOPOLYMER PRINTING PLATES HAVING INK-REPULSIVE NON-IMAGE AREAS

Sakuo Okai, Carlsbad, and Koichi Kimoto, Oceanside, both of Calif., assignors to Napp Systems (USA), Inc., San Marcos, Calif.

Filed Sep. 19, 1977, Ser. No. 834,086
Int. Cl.² G03C *1/76, 1/94;* G03F *7/02*
U.S. Cl. 96—67 **7 Claims**

1. A water-developable photopolymer printing plate comprising a substrate having applied thereto at least three additional layers of material disposed in a superimposed relation to one another, said layers comprising:

(a) a first ink-repulsive layer of silicon rubber material substantially covering said substrate,

(b) a water-developable photopolymer layer, and

(c) a second ink-repulsive and adhesive layer joining said first ink-repulsive and said photopolymer layers, said second layer comprising a silicon rubber material, polyvinyl acetate saponified to a degree of about 65 to 99 mole percent, and a water-soluble polymeric resin selected from the group consisting of water-soluble melamines, water-soluble polyesters, polyethylene glycol and cellulose, said second layer being further characterized in that the ratio of water soluble resin to silicon rubber material is between about 0.1 to 1 part by weight resin to each part by weight silicon rubber material, the ratio of polyvinyl acetate to silicon rubber material between about 0.1 to 2 parts by weight polyvinyl acetate to 1 part by weight silicon rubber material and the ratio of water-soluble resin to polyvinyl acetate is between about 0.1 to 2 parts by weight resin to 1 part by weight polyvinyl acetate.

4,164,423

BLACK PIGMENTED UV HARDENING PRINTING INK

Wilhelm Schumacher, Hanau; Lothar Rothbühr, Hürth-Hermülheim, and Joachim Armster, Bruchköbel, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,539
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2738819
Int. Cl.² C09D *11/02*
U.S. Cl. 106—20 **11 Claims**

1. In a UV-drying printing ink having a black pigment therein the improvement comprising employing as the black pigment a carbon black having the following physical and chemical properties:

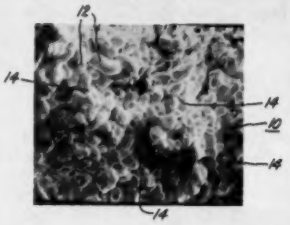
BET surface area	m^2/g	20–50
Particle diameter	nm	30–80
DBP adsorption	ml/100g	30–100
Volatile constituents	%	3–10
pH		3–6

4,164,424

ALUMINA CORE HAVING A HIGH DEGREE OF POROSITY AND CRUSHABILITY CHARACTERISTICS

Frederic J. Klug, Amsterdam; Wayne D. Pasco, and Svante Prochazka, both of Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1977, Ser. No. 840,022
Int. Cl.² B22D *29/00;* B28B *7/34*
U.S. Cl. 106—38.9 **6 Claims**



1. A fired ceramic article suitable for use as a core in the investment casting of directionally solidified eutectic and superalloy materials consisting essentially of

a porous body of ceramic material having a predetermined configuration and a porosity content of greater than about 20 percent by volume;

the body having a porous microstructure in which the grain morphology is characteristic of grains which have undergone vapor phase transport action.

4,164,425

CEMENT AND PROCESS FOR PRODUCING SAME

Boris I. Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Alexandr S. Sventsitsky, Severo-Vostok-2, 50, kv. 64; Marsel Y. Bikbau, massiv Junus-Abad, B-2, 21, kv. 58; Isaak M. Bun, Chilanzar, kvartal 8, 6a, kv. 19, and Arnold A. Kevvai, massiv Kara-Kamysh 1/3, 51, kv. 42, all of Tashkent, U.S.S.R.

Filed Jun. 14, 1977, Ser. No. 806,510
Claims priority, application U.S.S.R., Aug. 20, 1976, 2397380
Int. Cl.² C04B *7/02*
U.S. Cl. 106—89 **5 Claims**

1. Cement consisting of a highly-basic calcium chlorosilicate, calcium chloro-orthosilicate, calcium chloroaluminate and calcium chloroalumoferrite, the components being present in the following proportions, percent by weight:

highly-basic calcium chlorosilicate: 20 to 75

calcium chloro-orthosilicate: 10 to 55

calcium chloroaluminate: 0.5 to 30

calcium chloroalumoferrite: 2 to 20.

4,164,426

CONCRETE HAVING IMPROVED COMPRESSIVE STRENGTH

Joseph V. Sinka, Mendham, and Jose L. Villa, Hightstown, both of N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 909,305, May 24, 1978, abandoned. This application Jul. 17, 1978, Ser. No. 925,031
Int. Cl.² C04B *7/35*
U.S. Cl. 106—90 **20 Claims**

11. A process for production of hardened concrete characterized by enhanced compressive strength comprising adding an effective amount of zinc naphthaleneformaldehyde sulfonate sufficient to enhance compressive strength of the hardened concrete to a concrete mix containing 100 parts by weight of cement, from about 140 to about 260 parts by weight of sand, from about 100 to about 200 parts by weight of gravel and from about 35 to about 60 parts by weight of water.

4,164,427

STABILIZED HYDROCARBON TACKIFYING COMPOSITIONS

Darryl A. Godfrey, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1977, Ser. No. 822,187
Int. Cl.[2] C08K 5/13, 5/36; C08L 93/04
U.S. Cl. 106—218 8 Claims

1. Tackifying resin having improved oxidative stability consisting essentially of a tackifying resin and about 0.1 to about 5 weight percent of the stabilizing combination comprising 2,2'-methylenebis-(4-methyl-6-tertiarybutylphenol) and at least one dialkylthiodipropionate.

4,164,428

PLASTICIZED SULFUR COMPOSITION

Milutin Simic, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 2, 1978, Ser. No. 882,686
Int. Cl.[2] C01B 17/00; C09K 3/00
U.S. Cl. 106—287.13 9 Claims

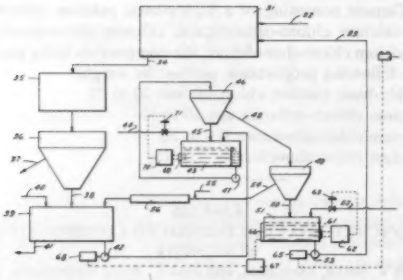
1. A plasticized sulfur composition comprising at least 50% by weight sulfur, a sulfur plasticizer, a finely divided particulate mineral suspending agent and an organosilane stabilizing agent having the formula $R—Si(OR')_3$ wherein R is an organic radical having at least one functional group selected from the group consisting of amino, epoxy, vinyl, methacryloxy and mercapto groups, and wherein R' is a low molecular weight alkyl group.

4,164,429

PROCESS AND INSTALLATION FOR THE PRODUCTION OF SELECTED CRYSTALLIZATION SEEDS FOR USE IN A SUGAR REFINERY

André Mercier, La Madeleine, France, assignor to Fives-Cail Babcock, Paris, France

Filed Dec. 13, 1977, Ser. No. 860,043
Claims priority, application France, Dec. 14, 1976, 76 37581
Int. Cl.[2] C13F 1/02, 1/06
U.S. Cl. 127—15 10 Claims



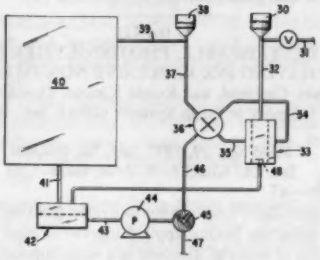
1. Process of producing crystallization seeds for seeding a solution of a crystallizable product, which comprises forming a suspension of crystals produced from the seeded solution in a fraction of the said solution, subjecting the said suspension to a first centrifugal separation wherein crystals whose size is superior to a predetermined maximal dimension are separated from the said suspension, subjecting the said suspension to a second centrifugal separation wherein crystals whose size is inferior to a minimal predetermined dimension are removed with the suspension, and seeding the said solution with the crystals separated from the suspension in the course of the second separation.

4,164,430

METHOD OF WASHING MATERIALS WHILE REVERSIBLY CIRCULATING WASH LIQUID THROUGH A CATION EXCHANGE RESIN

Elmar Reinwald, Dusseldorf; Heinz Smolka, Langenfeld, and Milan J. Schwuger, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 16, 1977, Ser. No. 852,029
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654353
Int. Cl.[2] B08B 7/04
U.S. Cl. 134—13 9 Claims



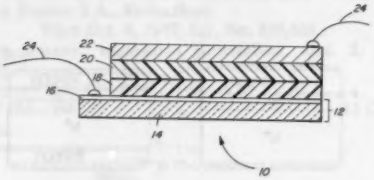
1. A method for machine washing and cleaning of solid soiled materials with aqueous wash liquor in the presence of water-insoluble cation exchange agents which are capable of binding the hardness components of the water and the soil, comprising withdrawing and recycling the wash liquor in contact with said solid soiled materials in a washing area through a water-insoluble cation exchange copolymer in particulate state having a swelled average particle size of between 10μ and 2000μ and having a calcium binding power of at least 2 mVal/gm, said copolymer being a copolymer or graft polymer derived from mono-olefinically-unsaturated carboxylic acids, said cation exchange copolymer being maintained completely out of contact with said solid soiled materials in a counter-current filter separate from the washing area, said wash liquor being passed through a lint filter before passing through said counter-current filter and then recycled to the washing area and said wash liquor at some time during said recycling containing soluble washing and cleaning compounds and washing said solid materials with the wash liquor while continuing the recycling of the wash liquor through said cation exchange copolymer, wherein the total amount of washing liquor is continuously or intermittently cyclically circulated from the washing area through the separate counter-current filter with the cation exchange copolymer and then back to the washing area at least five times during the washing process, and during said recycling of the wash liquor the direction of flow of said wash liquor through said cation exchange copolymer is reversed repeatedly during a wash period of 30 to 90 minutes, the direction of flow is reversed at intervals of 2 to 15 minutes, and where the amount of the cation exchange copolymer is sufficient to substantially soften the washing liquor, and said washing liquor contains from 0.2 to 10 gm per liter of other soluble washing and cleaning compounds including from 0.05 to 2 gm per liter of a water-soluble calcium-binding sequestrant, whereby said cation exchange copolymer is never in contact with said solid materials.

4,164,431

MULTILAYER ORGANIC PHOTOVOLTAIC ELEMENTS

Ching W. Tang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 821,115, Aug. 2, 1977, abandoned. This application May 18, 1978, Ser. No. 907,361
Int. Cl.[2] H01L *31/06*
U.S. Cl. 136—89 NB 17 Claims



1. In a photovoltaic element including a first layer of an organic electron donor material, a second layer of an organic electron acceptor material in contact with said first layer, at least one of said mateials being capable of absorbing light at wavelengths between about 350 and about 1000 nm and both of said materials forming a rectifying junction between them, and electrodes in operative ohmic contact with at least part of said layers,

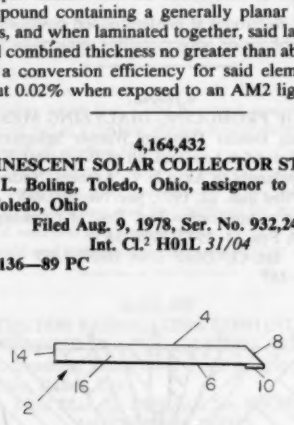
the improvement wherein said materials each comprise a compound containing a generally planar polycyclic nucleus, and when laminated together, said layers produce a total combined thickness no greater than about 0.5 micron and a conversion efficiency for said element of at least about 0.02% when exposed to an AM2 light source.

4,164,432

LUMINESCENT SOLAR COLLECTOR STRUCTURE

Norman L. Boling, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 9, 1978, Ser. No. 932,241
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 PC 10 Claims



1. A luminescent solar collector having a beveled edge meeting an extended face surface thereof at an angle of 40 to 50 degrees, and physically attached and optically coupled to a relatively small area of said surface at least one photovoltaic cell adjacent to and parallel to said edge, said beveled edge having a highly reflective coating thereon.

4,164,433

TUBE SKIN THERMOCOUPLES AND METHOD OF MAKING SAME

Edward A. Granahan, Richmond, and Carrold H. Paulson, Jr., Palatine, both of Ill., assignors to Pneumo Corporation, Boston, Mass.

Filed May 5, 1978, Ser. No. 903,168
Int. Cl.[2] H01L *35/02*
U.S. Cl. 136—229 20 Claims

1. A thermocouple assembly comprising:

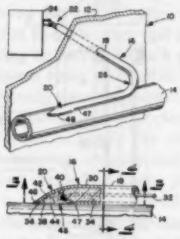
a sheathed thermocouple cable including an elongate tubular metallic sheath having an axial portion, a pair of axially extending thermocouple conductors in said sheath, and electrically insulating means in said sheath supporting said conductors in electrically insulated spaced relation from each other and from said sheath, said cable having an angularly disposed sensing end, said sheath terminating at said sensing end in an open end face and having an end cavity substantially free of insulating means and opening to said end face, said end face being substantially parallel to the axis of the adjacent axial portion of said sheath;

a measuring junction of said conductors in said cavity; and

an end closure of filler metal substantially filling said cavity embedding said measuring junction therein, said end closure having an exposed face substantially flush with said end face and forming therewith a contact face adapted for contiguous intimate contact with a surface whose temperature is to be sensed when mounted thereon.

14. A method of fabricating a thermocouple assembly comprising the steps of:

(a) bending one end of an axially extending sheathed thermocouple cable portion including an elongate tubular metallic sheath, a pair of axially extending thermocouple conductors in said sheath, and electrical insulation in said sheath to support and space apart said conductors from each other and from said sheath;



(b) terminating the bent end along a plane substantially parallel to the axis of the adjacent unbent portion of the sheath;

(c) removing the insulation from the end of the bent end to form an end cavity substantially free of insulation and open at the end thereof to expose the ends of the thermocouple conductors;

(d) forming a measuring junction to the conductors in the cavity;

(e) filling the cavity with filler metal to form an end closure with the measuring junction embedded therein; and

(f) forming the exposed portions of the end closure and sheath at the terminal end of the bent end to provide a substantially flat contact face adapted for contiguous intimate contact with a surface whose temperature is to be sensed.

4,164,434

ALUMINUM ALLOY CAPACITOR FOIL AND METHOD OF MAKING

Julius C. Fister, Jr., Hamden, and John F. Breedis, Trumbull, both of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 2, 1977, Ser. No. 847,782
Int. Cl.[2] C22F *1/04*; C22C *21/00*
U.S. Cl. 148—2 33 Claims

1. An aluminum alloy foil having a significant increase in capacitance properties which is particularly useful as foil material in electrical capacitors, said alloy consisting essentially of from 0.005 to 0.03% by weight titanium, balance aluminum.

9. A process for producing aluminum alloy foil which exhibits high capacitance levels in cold worked tempers, said process comprising the steps of:

(a) casting an ingot of an aluminum alloy consisting essentially of from 0.005 to 0.03% by weight titanium, balance aluminum;

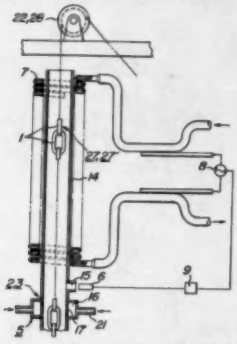
(b) cleaning and scalping said ingot to remove any visible impurities;
(c) homogenizing said ingot at a temperature ranging from 850° to 1175° F. for at least ½ hour;
(d) hot working said ingot at 450° to 1100° F.;
(e) cooling said ingot at a minimum cooling rate of 50° F. per hour; and
(f) cold working said ingot to foil with a minimum reduction of 80% to a final gage.

4,164,435

METHOD FOR HEAT TREATMENT OF LINK CHAINS

Norio Kanetake, Tokyo, Japan, assignor to Kabushiki Kaisha Kito, Kawasaki, Japan

Filed May 31, 1977, Ser. No. 801,976
Claims priority, application Japan, Jun. 16, 1976, 51-69666
Int. Cl.[2] C21D *9/00*
U.S. Cl. 148—153 **10 Claims**



1. A method of heat treating link chains of iron or steel wherein the link chain is continuously subjected to a high frequency induction heating, each link element of the link chain being heated such that the temperature at the curved portions of the link element is higher than at the parallel portions thereof, and the link chain thus heated is cooled to quench it, characterized in that the conditions of the high frequency induction heating and the speed of movement of the link chain are selected so that the austenitizing temperature $T_{\gamma\text{-}K}$ at the curved portions, the austenitizing temperature $T_{\gamma\text{-}H}$ at the parallel portions of the link chain and the temperature TAc_3 of the Ac_3 transformation point satisfy the relationship

$$T_{\gamma\text{-}K} > T_{\gamma\text{-}H} \geqq TAc_3,$$

and that during the heat treatment the temperature changes smoothly and continuously thereby to avoid a sudden temperature transition between the curved and parallel portions of the link element.

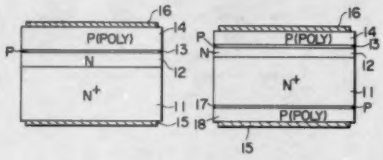
4,164,436

PROCESS FOR PREPARATION OF SEMICONDUCTOR DEVICES UTILIZING A TWO-STEP POLYCRYSTALLINE DEPOSITION TECHNIQUE TO FORM A DIFFUSION SOURCE

Mitsuru Ura; Kenji Miyata; Takaya Suzuki, and Takuzo Ogawa, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 18, 1978, Ser. No. 925,792
Claims priority, application Japan, Jul. 22, 1977, 52-87437
Int. Cl.[2] H01L *21/205, 21/225*
U.S. Cl. 148—174 **8 Claims**

1. A process for the preparation of semiconductor devices, which comprises the steps of:
(a) maintaining a semiconductor substrate having a semiconductor single crystal region of one conductivity type exposed on one main surface thereof, at a temperature lower than the temperature causing substantial precipitation of a semiconductor from the gas phase,
(b) initiating supply of a gaseous mixture comprising a gas of a starting substance of a semiconductor, a gas of impurities capable of providing a semiconductor of the other conductivity type and a carrier gas therefor to said main surface of the semiconductor substrate,
(c) heating said semiconductor substrate to grow from the gas phase an amorphous or polycrystalline semiconductor layer of the other conductor type on said one main surface



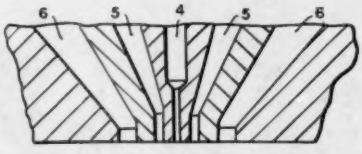
of the semiconductor substrate and diffuse the impurities deciding the conductor type of the amorphous or polycrystalline semiconductor layer of the other conductivity type, into said semiconductor single crystal region of one conductivity type, whereby a semiconductor single crystal region of the other conductivity type is formed in said semiconductor single crystal region of one conductivity type, and
(d) forming electrodes at predetermined positions including said amorphous or polycrystalline semiconductor layer.

4,164,437

METHOD OF PRODUCING DIALYZING MEMBRANE

Werner Henne; Gustav Dünweg; Werner Schmitz; Raimund Pohle, and Friedrich Lawitzki, all of Wuppertal, Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jun. 23, 1977, Ser. No. 809,486
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 2627858; Feb. 11, 1977, 2705734
Int. Cl.[2] D01F *1/08;* B32B *5/00*
U.S. Cl. 156—167 **10 Claims**



1. A method of producing a multilayer dialyzing membrane composed of two or more firmly adhered cellulosic layers formed by regeneration of cellulose from a cuprammonium solution, including at least one layer consisting essentially of a semipermeable regenerated cellulose and at least one other layer consisting essentially of a regenerated cellulose containing embedded therein fine particles of an adsorbent material, which method comprises:
spinning at least two cuprammonium spinning solutions from adjacent slots of a spinning head for immediate layer to layer contact and conducting the spun contacting layers over an air gap of not more than 50 times the spacing of the adjacent slots to pass into a precipitating bath, one of said at least two cuprammonium spinning solutions having suspended therein said fine particles of an adsorbent material in an amount of up to 95% by weight and another of said at least two cuprammonium spinning solutions being free of adsorbent particles;

coagulating the layers of spinning solutions in said precipitating bath to firmly adhere to each other and to entrap the fine particles of adsorbent material substantially completely in the spun layer in which said adsorbent material was originally suspended.

4,164,438

METHOD OF MAKING TRANSVERSE FLOW OF CIGARETTE FILTERS

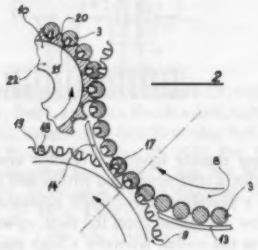
Jean-Pierre Lebet, Montreux, Switzerland, assignor to Baumgartner Papiers S.A., Switzerland

Filed Oct. 5, 1977, Ser. No. 839,607

Claims priority, application Switzerland, Oct. 5, 1976, 12568/76

Int. Cl.[2] B29C *17/00*; A24C *5/50*

U.S. Cl. 156—180 **13 Claims**



1. A method of making transverse-flow cigarette filters which comprises:

forming cellulose acetate previously impregnated with a plasticizing agent into a rod having a porous covering,

cutting said rod at a cutting station into sections each having the length of several filters,

forming indentations in opposite sides of said rod sections while conveying said rod sections from said cutting station and positioning said rod sections by means engaging ends of said rod sections, and

cutting said rod sections into individual filter lengths.

4,164,439

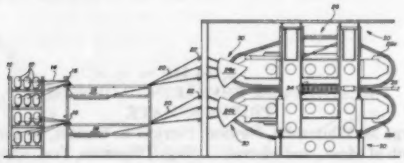
APPARATUS FOR FABRICATING CONTINUOUS FIBER REINFORCED PLASTIC GRATING ARTICLES

William C. Coonrod, Richardson, Tex., assignor to Fibergate Corporation, Dallas, Tex.

Filed Mar. 23, 1978, Ser. No. 889,392

Int. Cl.[2] B65H *81/00*

U.S. Cl. 156—441 **20 Claims**



1. An apparatus for the production of fiber reinforced plastic grate articles comprising:

(a) upper and lower continuous molding tracks having molding teeth, said tracks rotatable about a path such that said molding teeth close to form a molding cavity along a portion thereof;

(b) winder means for guiding plastic resin coated reinforcing fibers into said continuous mold tracks and weaving said fibers back and forth transversely across said tracks between said molding teeth.

4,164,440

DEVICE FOR VULCANIZING CONVEYOR BELTS AND SIMILAR ARTICLES

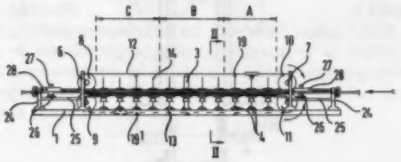
Augusto Previati, Milan, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

Filed Nov. 14, 1977, Ser. No. 851,379

Claims priority, application Italy, Dec. 13, 1976, 30336 A/76

Int. Cl.[2] B30B *15/34*

U.S. Cl. 156—583.1 **8 Claims**



1. In a device for vulcanizing conveyor belts consisting essentially of an improved flat platen press comprising two platens which are parallel to each other and superimposed, a plurality of frames, resting on carriages, each provided with a central aperture, the platens being inserted in the frame apertures, one of the platens being attached to the rim of the frame apertures and the other platen being supported by the pistons of cylinder/piston systems attached to the rim of the frame apertures, clamps for clamping, moving and tensioning the conveyor belt up-line and down-line of the platens, and two metal strips subtended by cylinders, one metal strip surrounding the upper platen in the longitudinal direction and the other metal strip surrounding the lower platen in the longitudinal direction, means for heating each of the platens and means for substantially reducing the coefficient of sliding friction between each platen and the corresponding metal strip surrounding it, the improvement consisting in that the means for substantially reducing the coefficient of sliding friction comprises a layer of sintered metallic material impregnated with a substance having a low coefficient of friction disposed between each platen and the metal strip surrounding it.

4,164,441

PROCESS AND APPARATUS FOR CONCENTRATING CORROSIVE LIQUID USING RADIANT HEAT

Hans L. Kühnlein, Fuellinsdorf, Switzerland, and Wolfgang-Dieter Müller, Leverkusen, Fed. Rep. of Germany, assignors to Hch. Bertrams Aktiengesellschaft, Basel, Switzerland and Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 802,103

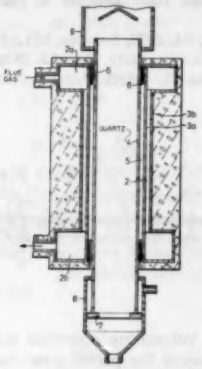
Claims priority, application Switzerland, Jun. 18, 1976, 007805/76

Int. Cl.[2] B01D *1/22*

U.S. Cl. 159—13 A **7 Claims**

1. A process for the separation of corrosive liquid mixtures by evaporating at least one component thereof, comprising establishing a downwardly flowing film of said liquid mixture on the first surface of a first member having first and second surfaces and which is permeable to radiation, supplying heat to the first surface of a second member having first and second surfaces and spaced from the second surface of said first member by a gas space, the heat being supplied to said first surface of said second member by direct contact with hot flue gases supplied to a space of which said second member constitutes

one bounding element, the second surface of said second member transferring heat by radiation to the second surface of the



first member, thereby evaporating at least one component of said liquid mixture, and withdrawing the evaporated material.

4,164,442

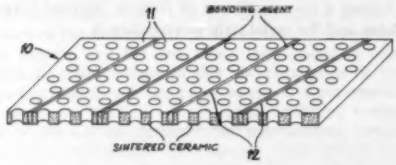
ABRASION-RESISTANT PLATE

Heinrich Bartelmuss, A-8833 Teufenbach 63,, Steiermark, Austria

Division of Ser. No. 631,618, Nov. 13, 1975, Pat. No. 4,047,993. This application Jun. 16, 1977, Ser. No. 807,330

Int. Cl.[2] C04B *35/00;* **D21F** *1/52*

U.S. Cl. 162—352 **8 Claims**



1. An abrasion-resistant plate divided into a multiplicity of flat, coplanar and closely juxtaposed sections of like width and thickness consisting of sintered refractory material with a predominant ceramic component including at least one silicate in a proportion of up to 3% by weight, said sections having confronting coextensive edges forming narrow gaps therebetween, and a bonding agent of silicon carbide completely filling said gaps while uniting said sections into a continuous body.

7. In paper-making machinery, in combination, an endless screen with an upper run forming a carrier for a slurry of wood pulp and paper, and a support for said upper run comprising at least one abrasion-resistant plate perpendicular to said screen subdivided into a multiplicity of flat, coplanar and closely juxtaposed sections of like width and thickness consisting of sintered refractory material with a predominant ceramic component including at least one silicate as a minor component in a proportion of up to 3% by weight, said sections having confronting coextensive edges generally parallel to the direction of screen motion forming narrow gaps therebetween, and a bonding agent of silicon carbide completely filling said gaps while uniting said sections into a continuous body.

4,164,443

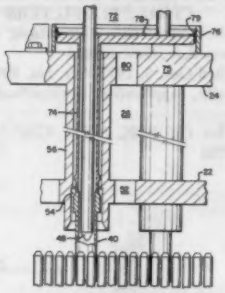
HYDRAULIC FUEL HOLD DOWN

John F. Gibbons, Windsor, and Robert L. Hellens, West Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 4, 1977, Ser. No. 793,585

Int. Cl.[2] G21C *3/12*

U.S. Cl. 176—50 **7 Claims**



1. In a nuclear reactor having; a reactor vessel having an inlet and an outlet; a core supported within said reactor vessel, and formed of a plurality of vertically elongated fuel assemblies; a mass flow of coolant from the inlet, upwardly through said core, and to the outlet, whereby a high pressure is established at the inlet, an intermediate pressure at the core inlet, and a low pressure at the outlet; a horizontal seal plate structure within said reactor vessel dividing said reactor vessel into a high pressure plenum above said seal plate and a low pressure plenum below said seal plate, said high pressure plenum being in direct fluid communication with the reactor vessel inlet, and said low pressure plenum being in direct fluid communication with the reactor vessel outlet; a fuel assembly hold down apparatus comprising: a push rod in vertical alignment with a fuel assembly and in contact with the upper end thereof; a piston attached to the upper portion of said push rod, said push rod restraining relative downward movement of said piston; vertical surface of said seal plate structure surrounding an opening therein and in sliding sealing relationship with said piston, whereby the upper surface of said piston is exposed to the high pressure plenum and the lower surface of said piston is exposed to the low pressure plenum.

4,164,444

METHOD FOR PREPARING ADENOSINE TRIPHOSPHATE

George M. Whitesides, Newton; Patricia E. Garrett, Somerville, both of Mass., and Merrell G. Siegel, Houston, Tex., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 666,995, Mar. 15, 1976, Pat. No. 4,088,675. This application Jan. 31, 1977, Ser. No. 764,516

Int. Cl.[2] C12D *13/06;* **C07H** *19/20*

U.S. Cl. 435—92 **10 Claims**

1. A method of preparing adenosine triphosphate in an enzyme-catalyzed reaction, said method comprising the step of reacting adenosine diphosphate in the presence of a phosphotransferase with an acetyl phosphate salt in which the cation is derived from the group of ammonia and primary, secondary and tertiary amines.

4,164,445

ETHANOL AS THE MAJOR SOURCE OF CARBON AND ENERGY IN PENICILLIN PRODUCTION

Brian T. Sheehan; Judith Baymiller, and Robert W. Eltz, all of Princeton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 27, 1975, Ser. No. 562,540
Int. Cl.[2] C12D *9/10*
U.S. Cl. 435—46 5 Claims

1. In a fermentative process of producing penicillin by aerobically culturing a penicillin producing microorganism of the Penicillium genus in a medium containing a source of carbon and energy, a source of nitrogen, inorganic salts, and side-chain precursor followed by the step of recovering the penicillin from the medium, wherein the improvement comprises employing ethanol as the major source of carbon and chemical energy.

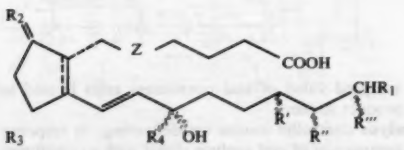
4,164,446

PROSTAGLANDIN DERIVATIVES

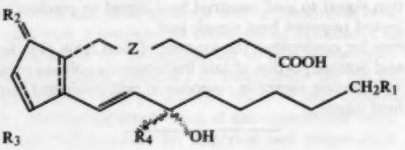
Arthur F. Marx, Delft, and Jean Doodewaard, Schipluiden, both of Netherlands, assignors to Gist Brocades N.V., Netherlands

Division of Ser. No. 561,895, Mar. 25, 1975, Pat. No. 4,054,595.
This application Sep. 9, 1977, Ser. No. 831,950
Claims priority, application United Kingdom, Mar. 26, 1974, 13399/74; Mar. 26, 1974, 13400/74
Int. Cl.[2] C12D *1/02*
U.S. Cl. 435—63 6 Claims

1. Process for the preparation of 18ξ-, 19ξ- or 20ξ-hydroxy-prostanglandin compounds of the formula:



wherein the dotted line in the position 8–12 indicates the optional presence of a double bond and the waved lines indicate that the substituents at the represented bonds are either in the α or β position; Z represents —CH_2CH_2— or cis —CH=CH—; R_1 represents a hydrogen atom or a methyl or ethyl group; R_2 represents either an oxygen atom or a hydrogen atom and an α or β hydroxy group; R_3 represents a hydrogen atom or a hydroxyl group; R_4 represents a hydrogen atom or a methyl group; one of R', R'' and R''' represents a hydroxyl group and the others a hydrogen atom, which comprises subjecting a compound of the formula:



wherein the dotted line in the position 10–11 indicates the optional presence of a double bond in case the 8–12 position is saturated and the other symbols are as defined hereinabove, to the hydroxylating activity of microorganisms or the enzymes thereof of the class Oomycetes, Coelomycetes, Hyphomycetes, Gasteromycetes, Hymenomycetes, Pyrenomycetes, Loculoascomycetes or Zygomycetes or, as far as the introduction of a hydroxyl group in position 18 or 19 is concerned, of the genus Streptomycetes.

4,164,447

O-TRANSCARBAMOYLASE

Ian D. Fleming, Chalfont St. Peter; Michael K. Turner, Wembley, and Stephen J. Brewer, High Wycombe, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Division of Ser. No. 768,945, Feb. 15, 1977, Pat. No. 4,075,061.
This application Nov. 22, 1977, Ser. No. 854,032
Claims priority, application United Kingdom, Feb. 19, 1976, 6623/76
Int. Cl.[2] C12D *13/10*
U.S. Cl. 435—173 6 Claims

1. An 0-transcarbamoylase of microbial origin which is capable of transferring a carbamoyl group to a 3-hydroxymethyl cephalosporin to produce a 3-carbamoyloxymethyl cephalosporin, and which is partially or completely free from deleterious enzymes.

4,164,448

ACTIVATION OF CHOLESTEROL OXIDASE FOR CHOLESTEROL ASSAY

Peter Röeschlau; Gunter Lang; Klaus Beaucamp, all of Tutzing; Erich Bernt, Munich, and Wolfgang Gruber, Tutzing-Unterzeismering Am Oberanger, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 529,669, Dec. 4, 1974, abandoned. This application Feb. 14, 1977, Ser. No. 768,530
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1973, 2361169; Aug. 16, 1974, 2439348
Int. Cl.[2] C07G *7/02;* G01N *31/14*
U.S. Cl. 435—11 23 Claims

1. Process for the activation of analytically pure, detergent-free, storage-stable cholesterol oxidase, recovered from a micro-organism by extraction with a surfactant, for the analytic determination of cholesterol which process comprises removing all traces of said surfactant from said cholesterol oxidase to produce a surfactant-free cholesterol oxidase and then adding to an aqueous solution of the surfactant-free cholesterol oxidase between 0.005% to 0.1% by weight, based on the weight of the aqueous cholesterol oxidase solution, of at least one surface-active compound with lipophilic and hydrophilic properties before use of said cholesterol oxidase.

17. Diagnostic agent in solid form for the detection and determination of cholesterol and cholesterol esters in body fluids which comprises a solid carrier having impregnated or embedded therein cholesterol oxidase, a system for the detection of hydrogen peroxide, buffer and from 2 to 30%, based on the total solid diagnostic agent of at least one surface-active compound with lipophilic and hydrophilic properties.

4,164,449

SURFACE SEPARATION TECHNIQUE FOR THE DETECTION OF MICROBIAL PATHOGENS

Gordon L. Dorn, Dallas, Tex., and John R. Haynes, Florissant, Mo., assignors to J. K. and Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.

Filed Nov. 3, 1977, Ser. No. 848,337
Int. Cl.[2] C12K *1/04*
U.S. Cl. 435—30 10 Claims

1. In a method of detecting the presence of microbial pathogens in a lysed blood sample wherein blood is mixed with a lysing reagent, the improvement consisting of:

concentrating said microbial pathogens and separating said microbial pathogens from the residual of said lysed blood sample by;

depositing said lysed blood sample on a continuous smooth surface within a confined sterile zone;

subjecting said confined sterile zone containing said lysed blood sample to centrifugation thereby causing said microbial pathogens to pass out of suspension in said lysed blood sample and concentrate on said continuous smooth surface; and

separating said concentrated microbial pathogens from contact with the residual portion of said lysed blood sample.

4,164,450

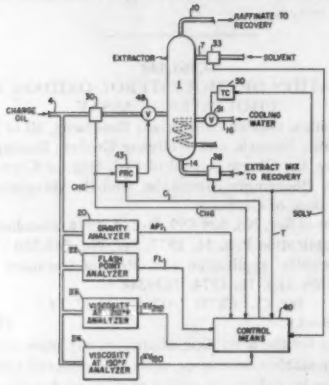
CONTROL SYSTEM FOR A FURFURAL REFINING UNIT RECEIVING LIGHT SOUR CHARGE OIL

Avilino Sequeira, Jr.; John D. Begnaud, and Frank L. Barger, all of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 851,994, Nov. 16, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,911

Int. Cl.[2] C10G *21/00*; G06G *7/58*

U.S. Cl. 196—14.52 **9 Claims**



1. A control system for a furfural refining unit receiving light sour charge oil and furfural one of which is maintained at a fixed flow rate while the flow rate of the other is controlled by the control system, treats the received light sour charge oil with the received furfural to yield extract mix and raffinate, comprising gravity analyzer means for sampling the charge oil and providing a signal API corresponding to the API gravity of the charge oil, flash point analyzer means for sampling the charge oil and providing a signal FL corresponding to the flash point temperature of the charge oil, viscosity analyzer means for sampling the charge oil and providing signals KV_{150} and KV_{210} corresponding to the kinematic viscosities, corrected to 150° F. and 210° F., respectively, flow rate sensing means for sensing the flow rates of the charge oil and of the furfural and providing signals CHG and SOLV, corresponding to the charge oil flow rate and the furfural flow rate, respectively, temperature sensing means for sensing the temperature of the extract-mix and providing a corresponding signal T, and control means connected to all of the analyzer means, and to all the sensing means for controlling the other flow rate of the charge oil and the furfural flow rates in accordance with signals API, FL, KV_{210}, KV_{150}, T, CHG and SOLV.

4,164,451

PRESSURE RESPONSIVE FRACTIONATION CONTROL

Gary L. Funk, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 5, 1978, Ser. No. 912,690

Int. Cl.[2] F25J *3/02*

U.S. Cl. 203—2 **30 Claims**

1. Apparatus comprising:

fractionation column means for receiving at least one feed material stream and delivering an overhead product stream from the top portion thereof and a bottom product stream from the bottom portion thereof;

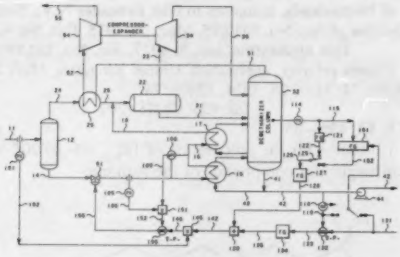
heating means for providing heat to said bottom portion of said fractionation column means;

pressure transducer means for sensing the pressure at a preselected location within said fractionation column means and delivering a column pressure signal representative of the thus sensed pressure;

a first signal conversion means for accepting said column pressure signal and delivering in response thereto a temperature requirement signal representative of the value of a column bottom temperature for said fractionation column means required to provide a preselected value of a constituent ratio in said bottom product stream at the column pressure represented by said column pressure signal;

a second signal conversion means for accepting said temperature requirement signal and delivering in response thereto a heat requirement signal representative of the direction and magnitude of the change in heat input to said fractionation column means required to provide the column bottom temperature for said fractionation column means required to provide said preselected value of said constituent ratio in said bottom product stream at the column pressure represented by said column pressure signal;

analyzer means for analyzing said bottom product stream and delivering an analysis signal representative of the



analyzed value of said constituent ratio in said bottom product stream;

analysis controller means for delivering, in response to a comparison of said analysis signal with a constituent ratio set point signal, a temperature requirement adjustment signal representative of the adjustment of said temperature requirement signal necessary to compensate for the difference between said preselected value of said constituent ratio and the analyzed value of said constituent ratio;

a third signal conversion means for accepting said temperature requirement adjustment signal and delivering in response thereto a required heat correction signal representative of the adjustment of said required heat signal necessary to compensate for the difference between said preselected value of said constituent ratio and the analyzed value of said constituent ratio;

a correction means for applying said required heat correction signal to said required heat signal to produce a corrected required heat signal; and

means for controlling the amount of heat flow delivered to said bottom portion of said fractionation column means by said heating means in response to said corrected required heat signal.

4,164,452

PRESSURE RESPONSIVE FRACTIONATION CONTROL

Gary L. Funk, and Dexter E. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 5, 1978, Ser. No. 912,701

Int. Cl.[2] F25J *3/02*

U.S. Cl. 203—2 **29 Claims**

1. Apparatus comprising:

fractionation column means for receiving at least one feed material stream and delivering an overhead product

stream from the top portion thereof and a bottom product stream from the bottom portion thereof;

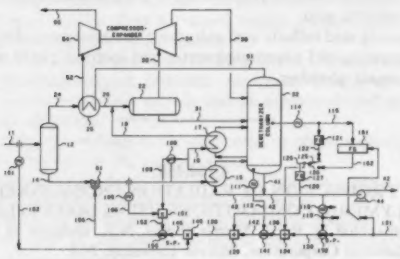
heating means for providing heat to said bottom portion of said fractionation column means;

pressure transducer means for sensing the pressure at a preselected location within said fractionation column means and delivering a column pressure signal representative of the thus sensed pressure;

a first signal conversion means for accepting said column pressure signal and delivering in response thereto a temperature requirement signal representative of the value of a column bottom temperature for said fractionation column means required to provide a preselected value of a constituent ratio in said bottom product stream at the column pressure represented by said column pressure signal;

a second signal conversion means for accepting said temperature requirement signal and delivering in response thereto a required heat signal representative of the direction and magnitude of the change in heat input to said fractionation column means required to provide the column bottom temperature required to provide said preselected value of said constituent ratio in said bottom product stream at the column pressure represented by said column pressure signal;

temperature transducer means for sensing a column bottom temperature within said fractionation column means adja-



cent the bottom thereof and delivering a bottom temperature signal representative of the thus sensed temperature;

temperature controller means for delivering a required heat correction signal in response to a comparison of said bottom temperature signal with a bottom temperature set point signal;

analyzer means for analyzing said bottom product stream and delivering an analysis signal representative of the analyzed value of said constituent ratio within said bottom product stream;

analysis controller means for delivering, in response to comparison of said analysis signal with a constituent ratio set point signal, a temperature requirement adjustment signal representative of the adjustment of said temperature requirement signal necessary to compensate for the difference between said preselected value of said constituent ratio and the analyzed value of said constituent ratio;

a first correction means for applying said temperature requirement adjustment signal to said temperature requirement signal to produce said bottom temperature set point signal;

a second correction means for applying said required heat correction signal to said required heat signal to produce a corrected required heat signal; and

means for controlling the amount of heat flow delivered to said bottom portion of said fractionation column means by said heating means in response to said corrected required heat signal.

4,164,453

METHOD FOR REGENERATING ZINC

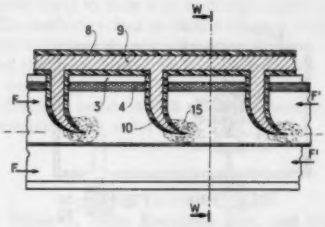
Jean Jacquelin, Limours, France, assignor to Compagnie Generale d'Electricite, Paris, France

Division of Ser. No. 857,832, Dec. 5, 1977. This application Jun. 26, 1978, Ser. No. 919,102

Claims priority, application France, Dec. 3, 1976, 76 36512

Int. Cl.[2] C25C *5/02*

U.S. Cl. 204—10 **3 Claims**



1. A method of regenerating zinc from an alkaline zincate solution which is in contact with at least two electrodes connected to a D.C. generator so that zinc particles are deposited on the negative electrode and oxygen is evolved at the positive electrode; said method comprising alternating period steps including a deposition step in which the solution is conveyed past the negative electrode in a first direction at a speed which is sufficiently low for the zinc particles to be deposited thereon, and a detachment step in which the solution is conveyed past the negative electrode in the opposite direction at a speed which is sufficiently high for the previously-deposited zinc particles to be detached from the negative electrode.

4,164,454

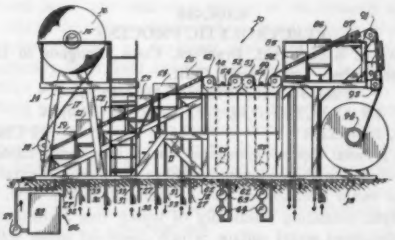
CONTINUOUS LINE FOR PLATING ON METAL STRIP MATERIAL

Michael A. Schober, Stuttgart, Fed. Rep. of Germany, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 1, 1977, Ser. No. 847,636

Int. Cl.[2] C25D *7/06*

U.S. Cl. 204—28 **17 Claims**

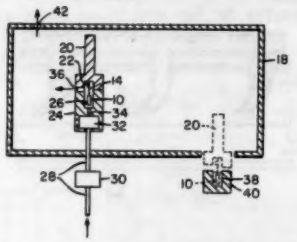


1. A process for the continuous electroplating of a metallic strip comprising the steps of feeding a strip on a continuous upward incline through a series of plating preparation baths contained in a series of tanks arranged on an upward incline substantially the same as the moving strip, each of said tanks having an entrance slit in one wall and an exit slit in the opposite wall but positioned higher than the entrance slit to provide said incline for the strip passing therethrough, moving the strip through one or more plating baths, rinsing the plated strip and drying the strip, wherein the strip is passed over rollers in the plating bath and between spaced anodes therein, causing the strip to become the cathode, and pumping plating solution through the anodes toward the center of the moving strip.

4,164,455
PROCESS OF FORMING A SOLID TANTALUM CAPACITOR

Bernard S. Aronson, Elmira; Andrew Herczog, and James A. Murphy, both of Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 5, 1976, Ser. No. 673,659
Int. Cl.[2] H01G 9/24
U.S. Cl. 204—38 A 11 Claims



1. In the method of forming a solid tantalum capacitor including anodizing the surface of a porous tantalum pellet to form a dielectric layer thereon and depositing a coating of manganese nitrae over said dielectric layer, the improvement comprising heating the composite so formed to a temperature of between about 170° C. and about 250° C. within an enclosed in a nitrogen dioxide containing atmosphere for a period of time sufficient to convert said manganese nitrate to a layer of manganese dioxide, said enclosure being semiclosed and in communication with the surrounding atmosphere exclusively through at least one vent formed therein, said nitrogen dioxide atmosphere being immediately adjacent to the surface of said pellet and comprising at least about 10% by volume nitrogen dioxide and the remainder being water vapor and gas inert in the conversion process, whereby scale formation on said layer of manganese dioxide is eliminated or takes place to an insignificant degree eliminating the need for sizing the capacitor pellet.

4,164,456
ELECTROLYTIC PROCESS

Theodore F. Korenowski, Branford, Conn., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 15, 1978, Ser. No. 916,328
Int. Cl.[2] C25D 3/38, 3/12, 3/22; H01M 4/04
U.S. Cl. 204—52 R 12 Claims

1. In a metal electrodeposition process employing cathode and insoluble anode means immersed in a common electrolyte wherein metal is deposited onto a cathode surface from the electrolyte consisting essentially of water, free sulfuric acid and a dissolved metal sulfate, which dissolved metal sulfate provides the metal ions to be deposited on the cathode surface, the improvement of increasing the limiting current density without detrimentally affecting the quality of the metal deposit which improvement comprises:

adding sufficient quantities of the metal sulfate in a particulate state to maintain a solids concentration of the particulate metal sulfate in the electrolyte during the electrodeposition,

providing agitation to suspend said metal sulfate solids in the electrolyte and to provide intimate contact of the resulting suspension with the cathode surface, and

maintaining the free sulfuric acid concentration in the liquid phase of the electrolyte suspension between about 50 and about 500 grams per liter.

4,164,457
METHOD OF RECOVERING HYDROGEN AND OXYGEN FROM WATER

Heiko Barnert; Mieczyslaw Perec, both of Jülich, and Bernd D. Struck, Langerwehe, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 917,842
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728171
Int. Cl.[2] C25B 1/04; C01B 13/00
U.S. Cl. 204—129 4 Claims

1. A method of recovering hydrogen and oxygen from water in a galvanic or electrolytic cell having an anode, made of a material selected from the group consisting of carbon and graphite, and a cathode, said anode and said cathode being separated from one another by a membrane to form an anode and cathode chamber respectively, which method includes the steps of:

adding water, sulfur dioxide, and very small quantities of hydriodic acid to said anode chamber of said cell;

electrochemically liberating hydrogen ions by anodic oxidation of said sulfur dioxide in the anolyte;

decomposing said water to form sulfuric acid in said anolyte;

electrolytically generating hydrogen gas at the cathode from said hydrogen ions;

removing electrolytic solution from said anode chamber;

evaporating water and hydriodic acid still present in said removed electrolytic solution to form an anhydride of said sulfuric acid;

heating said sulfuric acid anhydride to decompose same; and

returning said evaporated water and hydriodic acid to said anode chamber.

4,164,458
PRODUCTION OF RADIATION CROSSLINKED POLYMERIC COMPOSITIONS USING DIACETYLENES

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed Mar. 7, 1977, Ser. No. 775,150
Int. Cl.[2] C08F 255/00; B01J 1/10
U.S. Cl. 204—159.17 13 Claims

1. A method for producing a crosslinked polymeric composition which comprises the steps of admixing a diacetylene monomer, oligomer, polymer or mixture thereof, wherein the monomer has the formula, $RNHCO—O—CH_2—C{\equiv}C—C{\equiv}C—CH_2—O—OCNHR'$, in which R and R' are the same or different and are alkyl containing 1 to 20 carbon atoms, with a thermoplastic crosslinkable polymer and then subjecting the resulting mixture to actinic radiation or high energy ionizing radiation.

4,164,459
U.V.-CURABLE COATING COMPOSITION

Arie Noomen, Voorhout, and Egbert Wolters, Amsterdam, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

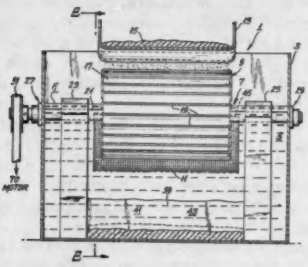
Filed Oct. 11, 1978, Ser. No. 950,444
Claims priority, application Netherlands, Oct. 11, 1977, 7711121
Int. Cl.[2] C08F 8/18, 8/34
U.S. Cl. 204—159.18 10 Claims

1. In a coating composition which is curable under the influence of ultraviolet light and is based on a U.V.-curable binder, a photoinitiator and a nitrogen-containing accelerator, the improved composition which comprises as an accelerator a tetrahydro-1,3-oxazine compound or an oxazolidine compound.

4,164,460
SYSTEM FOR THE DIELECTROPHORETIC SEPARATION OF PARTICULATE AND GRANULAR MATERIALS

Cy E. Jordan, and Casimir P. Weaver, both of Tuscaloosa, Ala., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 759,202, Jan. 13, 1977. This application Apr. 17, 1978, Ser. No. 896,873
Int. Cl.[2] B03C *5/00, 7/06*
U.S. Cl. 204—180 R 8 Claims



1. A process for separating particulate and granular materials by dielectrophoresis wherein the materials are separated by a divergent electric field produced within a liquid dielectric medium, which process comprises:

a. providing a contact zone defined by the space between a cylindrical-shaped rotatable electrode having a non-uniform conductor surface and an arcuate-shaped perforate electrode,

b. applying a voltage to the electrodes to create a divergent electric field in the contact zone,

c. passing the materials to be separated into the contact zone during rotation of the rotatable electrode,

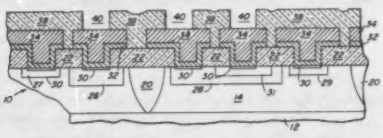
d. collecting the materials having dielectric constants lower than that of the liquid dielectric medium through the perforate electrode, and

e. separating by attraction to the non-uniform conductor surface of the rotatable electrode those materials having dielectric constants higher than that of the liquid dielectric medium.

4,164,461
SEMICONDUCTOR INTEGRATED CIRCUIT STRUCTURES AND MANUFACTURING METHODS

Hartmut Schilling, Boxboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 756,508, Jan. 3, 1977, Pat. No. 4,107,726. This application May 12, 1978, Ser. No. 905,264
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 EC 7 Claims



1. A method of forming a multiple layer interconnecting system for a semiconductor integrated circuit comprising the steps of:

forming a first aluminum lead metal layer into a first interconnecting system on a semiconductor body;

depositing an insulating layer on the first interconnecting system;

forming apertures in selected regions of such insulating layer to expose portions of the first aluminum lead metal layer of the first interconnecting system;

depositing a refractory metal layer over the insulating layer and through the apertures onto selected regions of the first aluminum lead metal layer of the first interconnecting system; and

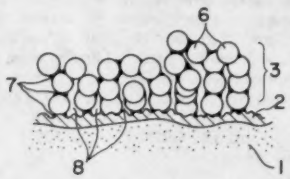
depositing a second aluminum lead metal layer over the refractory metal layer, and removing selected portions of the refractory metal layer and the second aluminum lead metal layer to form a second interconnecting system.

2. The method recited in claim 1 wherein the aperture forming step comprises the step of sputter cleaning the portions of the first aluminum lead metal layer and wherein the refractory metal depositing step includes the step of sputter depositing said refractory metal on said sputter cleaned portions of said first aluminum lead metal layer.

4,164,462
OXYGEN SENSOR

Norio Ichikawa, Mito; Kanemasa Sato, and Sadayasu Ueno, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1977, Ser. No. 855,325
Claims priority, application Japan, Nov. 29, 1976, 51-142250
Int. Cl.[2] G01N *27/58*
U.S. Cl. 204—195 S 5 Claims



1. An oxygen sensor, which comprises a zirconia layer for transmitting oxygen ions therethrough, provided to separate a gas whose oxygen concentration is to be detected from a reference gas; a first electron-conducting layer having a catalytic action, provided on a surface of the zirconia layer on the side of the gas whose oxygen concentration is to be detected; a second electron-conducting layer for ionizing oxygen molecules in the reference gas and taking the oxygen ions into the zirconia layer, provided on a surface of the zirconia layer on the side of the reference gas; and a protective layer of zirconia particles provided on the outer surface of the first electron-conducting layer, said zirconia particles being bonded to one another and to the first electron-conducting layer by a high melting point adhesive comprising a powder of borosilicate glass, water glass having a melting point of 900° C. or higher, a phosphate, or cement, whereby an electrical signal is generated between the first and the second electron-conducting layers in accordance with the difference in oxygen concentrations between the gas whose oxygen concentration is to be detected and the reference gas.

4,164,463
HYDROPHILIC FLUOROPOLYMERS

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 699,302, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 579,099, May 20, 1975, abandoned. This application Apr. 11, 1978, Ser. No. 895,472
Int. Cl.[2] C25B *13/08, 1/46*
U.S. Cl. 204—296 3 Claims

1. A diaphragm for a chlor-alkali cell comprising a hydrophilic fluoropolymer and a fibrous material resistant to attack by the cell liquor, wherein the hydrophilic fluoropolymer is provided as a hydrophylic fluoropolymer containing nonterminal units represented by the structure

where Z is

where

R is an alkyl radical of 1–12 carbon atoms or a cycloalkyl radical of 3–12 carbon atoms,

the hydrophilic fluoropolymer having a phosphorus content of about 0.1–10% by weight, not more than about 1% by weight of the fluoropolymer dissolving in water at 20° C.

4,164,464

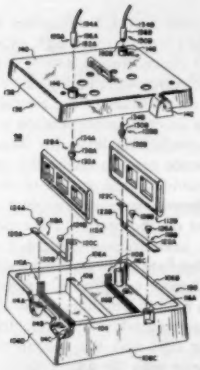
SAMPLE CONCENTRATOR

William B. Allington, deceased, late of Lincoln, Nebr. (by Richard T. Emery; executor); James W. Nelson, Spring, Tex.; Arthur L. Cordry, Lincoln, Nebr.; Gail A. McCullough, Lawndale, Calif., and Don E. Mitchell, Lincoln, Nebr., assignors to Instrumentation Specialties Company, Lincoln, Nebr.

Division of Ser. No. 781,176, Mar. 25, 1977. This application Apr. 14, 1978, Ser. No. 896,370

Int. Cl.[2] G01N *27/26, 27/28*

U.S. Cl. 204—299 R **29 Claims**



1. Apparatus for separating at least one molecular species from a sample, comprising:

a sample concentrating cell;

said sample concentrating cell having first and second sections;

said first section including a member adapted to receive a sample;

said second section including a membrane having pores sufficiently small to permit the membrane to hold said one molecular species and being adapted to receive at least one of the separated molecular species;

wall means for at least partly confining said first and second sections and adapted to support a buffer solution;

means for establishing an electrical potential between the side of the sample and the side of said membrane farthest from each other.

4,164,465

HYDROCARBON CRACKING WITH CATALYST CONTAINING A CO OXIDATION PROMOTER IN ULTRA-STABLE ZEOLITE PARTICLES

Elroy M. Gladrow, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 698,902, Jun. 23, 1976, Pat. No. 4,097,410. This application Feb. 3, 1978, Ser. No. 875,175

Int. Cl.[2] C10G *11/04;* B01J *29/12, 23/56*

U.S. Cl. 208—120 **10 Claims**

1. A catalytic cracking operation comprising:

(a) contacting hydrocarbon feedstock at cracking conditions with a hydrocarbon conversion catalyst which comprises particles of crystalline aluminosilicate zeolite containing rare earth metal and particles of an ultra-stable Y zeolite containing a CO oxidation promoter, which particles are dispersed on a porous oxide matrix to produce a catalyst containing 0.8 to 4.5 wt. % of a rare earth metal (as oxides) and 2 to 100 ppm of a CO oxidation promoter comprising a metal or a compound of a metal selected from Periods 5 and 6 of Group VIII of the Periodic Table, rhenium, chromium, manganese and combinations thereof, thereby forming cracked products and producing a spent catalyst having carbon deposited thereon, and

(b) regenerating said spent catalyst in contact with oxygen at elevated temperature to substantially burn the deposited coke to CO_2.

4,164,466

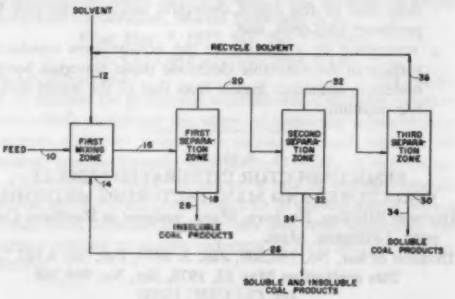
METHOD OF IMPROVING YIELD IN A COAL LIQUEFACTION PRODUCT DEASHING PROCESS

Roger A. Baldwin, Warr Acres; Robert E. Davis, Oklahoma City; Robert E. Leonard, Oklahoma City, and Donald E. Rhodes, Oklahoma City, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Mar. 20, 1978, Ser. No. 888,284

Int. Cl.[2] C10G *1/04, 29/20*

U.S. Cl. 208—177 **20 Claims**



1. A coal liquefaction product deashing process comprising:

providing a coal liquefaction product feed comprising soluble coal products and insoluble coal products;

providing a solvent consisting essentially of at least one substance having a critical temperature below 800 degrees F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310 degrees F., cycloparaffin hydrocarbons having normal boiling points below about 310 degrees F., open chain mono-olefin hydrocarbons having normal boiling points below about 310 degrees F., open chain saturated hydrocarbons having normal boiling points below about 310 degrees F., mono-, di, and tri-open chain amines containing from about 2–8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6–9 carbon atoms, heterocyclic amines containing from about 5–9 carbon atoms, and phenols

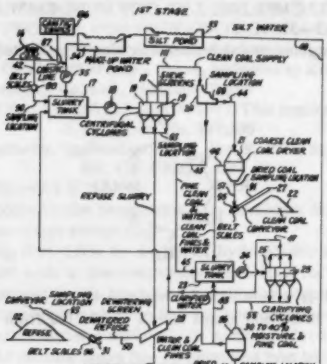
containing from about 6–9 carbon atoms and their homologs;
admixing said feed with said solvent in a mixing zone to provide a feed mixture;
introducing said feed mixture into a first separation zone maintained at an elevated temperature and pressure;
separating said feed mixture in said first separation zone into a first heavy phase and a first light phase comprising soluble coal products, solvent and some insoluble coal products;
withdrawing said first light phase from said first separation zone;
introducing said withdrawn first light phase into a second separation zone maintained at a temperature level higher than the temperature level in said first separation zone and at an elevated pressure;
separating said first light phase in said second separation zone into a second heavy phase comprising insoluble coal products, soluble coal products and some solvent and a second light phase comprising soluble coal products and solvent as said deashed coal liquefaction product;
withdrawing said second heavy phase from said second separation zone;
recycling at least a portion of said withdrawn second heavy phase to said first separation zone in admixture with said feed mixture to recover soluble coal products therefrom; and
withdrawing said first heavy phase from the first separation zone, said first heavy phase having an increased mineral matter content effected through recycle of said portion of the second heavy phase.

4,164,467

COAL WASHING PLANT EMPLOYING A FEED EQUALIZER AND A CRITICALLY DIMENSIONED DEFLECTOR SURFACE IN THE INLET PIPES OF A PLURALITY OF CYCLONES

Delbert I. Liller, Rte. 4, Box 64, Deer Park, Md. 21550

Division of Ser. No. 860,330, Dec. 14, 1977. This application Jul. 19, 1978, Ser. No. 926,058
Int. Cl.[2] B03B *7/00*
U.S. Cl. 209—10 **6 Claims**



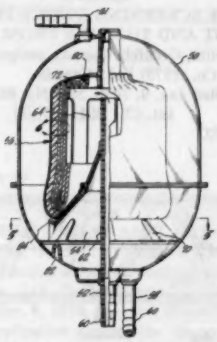
1. A continuously operating centrifugal separating cyclone coal washing plant for raw crushed coal having a make up water reservoir, a crushed coal supply, a slurry tank for mixing raw crushed coal from said supply and water in a water line from said reservoir and a pump for pumping water in said water line from said reservoir into said slurry tank and into an inlet pipe of circular cross section at the top of the cyclone, the cyclone having a clean coal outlet at the top and a refuse outlet at the bottom, that improvement comprising:
a plurality of centrifugal separating cyclones fed by a pump delivering slurry of high solids content at fixed pressure and a bowl velocity of about 8 to 28 linear feet per second, each of the cyclones operating at a pressure difference between the inlet and outlet due to said pumping velocity under deflected streamlined flow conditions from said slurry tank by means of a flat generally bodied deflector having a truncated spherical triangle cap portion to separate the coal into a clean coal fraction at the top of each cyclone and refuse which is withdrawn at the bottom of each cyclone;
said flat deflector having a center angle of 114° to 148°, deflector angle of 8° to 12° and an included angle of 120° to 170°;
a dewatering screen to separate clean coal particles from water;
a centrifugal dryer for said clean coal particles;
a silt pond which receives the water separated from the refuse;
the supernatant liquid from said silt pond feeding water into said make up reservoir; and
a caustic soda tank to dose aqueous sodium hydroxide into the water line between the pump and the make up water reservoir to adjust the pH to about 6–7 and compensate for acidity developed during continuous operation.

4,164,468

BLOOD TREATING DEVICE AND METHOD OF OPERATION

Donald A. Raible, Orange, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Division of Ser. No. 644,451, Dec. 29, 1975, which is a continuation-in-part of Ser. No. 542,593, Jan. 20, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 761,531
Int. Cl.[2] B01D *19/02*
U.S. Cl. 210—23 R **4 Claims**



3. A method for treating gas containing blood comprising:
receiving blood into a blood receiving and treating housing lower portion;
passing said blood along a predetermined blood flow path including passing said blood upwardly through an extended hollow column and discharging said blood from said hollow column into an upper portion of said receiving and treating housing;
removing gases and other foreign matter from the blood with a defoamer means spaced apart from said hollow column;
deflecting blood and uniformly distributing blood with a distribution plate positioned about the exterior of said hollow column; and
removing said treated blood from said blood receiving and treating housing lower portion.

4,164,469

METHOD OF CLEANING PHENOL-CONTAINING WASTE WATERS

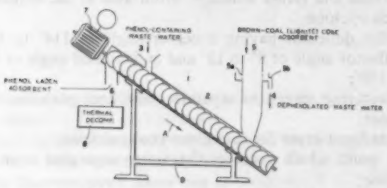
Armand Wagner, Esch, Luxembourg, assignor to ARBED - Acieries Reunies de Burbach-Eich-Dudelange S.A., Luxembourg, Luxembourg

Filed Jan. 23, 1978, Ser. No. 871,474

Claims priority, application Luxembourg, Jan. 21, 1977, 76626

Int. Cl.[2] C02C 5/02

U.S. Cl. 210—40 1 Claim



1. A process for the removal of phenols from a waste water containing same, comprising the steps of:

(a) passing the phenol-containing waste water in a counterflow with a brown-coal coke advanced by a screw conveyor to adsorb phenols from said waste water;

(b) recovering the phenolated brown-coal coke;

(c) mixing the phenolated brown-coal coke recovered in step (b) with a charge of metallurgical coking coal;

(d) coking the mixture of phenolated coke and coking coal in a coking charge in a coking furnace for producing coke for consumption in a metallurgical process; and

(e) introducing the coke produced in step (d) into said metallurgical process, thereby consuming the phenolated brown-coal coke.

4,164,470

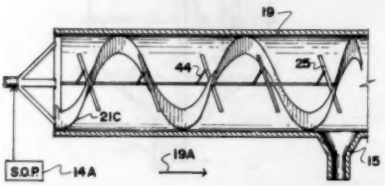
AUGER TYPE SCREENING DEVICE FOR REMOVING SEDIMENT AND THE LIKE FROM SOLUTIONS

Raymond P. Briltz, Grenfell, Canada, assignor to Global Pollution Control Co. (1975) Ltd., Canada

Filed Jan. 9, 1978, Ser. No. 867,840

Int. Cl.[2] B01D 17/00

U.S. Cl. 210—523 4 Claims



1. A modular liquid treatment assembly comprising in combination means for treating the liquid to induce formation of solids within said liquid, at least one tube clarifier, said clarifier including a casing, an inlet in said casing operatively connected to said first mentioned means whereby treated liquid is transferred to said casing, a solids outlet in said casing and a liquid outlet in said casing, and an auger assembly journalled for rotation within said casing for urging the settled solids towards said solids outlet, said liquid passing from said casing through said liquid outlet, said auger assembly consisting of a shaft, a series of spaced perforated baffles within said casing, concentrically mounted on said shaft, and a perforated auger flight also concentrically mounted on said shaft, surrounding said baffles and positioned between said baffles and said casing.

4,164,471

CONSTANT BOILING ADMIXTURES

William M. Hutchinson, deceased, late of Bartlesville, Okla., and by Florence M. Hutchinson, executrix, Claremore, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 783,243, Mar. 31, 1977, Pat. No. 4,097,398, Ser. and a division of Ser. No. 690,807, May 27, 1976, Pat. No. 4,039,465, which is a division of Ser. No. 602,353, Aug. 6, 1975, Pat. No. 4,024,086. This application Dec. 28, 1977, Ser. No. 865,141.

Int. Cl.[2] C09K 3/30; C11D 7/50; C23G 5/02

U.S. Cl. 252—1 3 Claims

1. A substantially constant boiling admixture of (A) 1,1,2-trifluoroethane and (B) 1,1,1-trifluoro-2-chloroethane wherein said (A) represents about 53.2 weight percent, and said (B) about 46.8 weight percent, at substantially atmospheric pressure.

4,164,472

$CACO_3$-CONTAINING DISPERSIONS

William J. Cheng, and David B. Guthrie, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 10, 1978, Ser. No. 894,979

Int. Cl.[2] C10M 3/18, 5/14, 7/20, 7/24

U.S. Cl. 252—18 17 Claims

1. A process of preparing a stable, fluid calcium-containing dispersion in a non-volatile liquid and a dispersant which comprises heating a calcium carboxylate which contains stoichiometric amounts of carboxylate in relation to basic calcium at a temperature above the decomposition temperature of the said calcium carboxylate to obtain a virtually quantitative yield of $CaCO_3$ which is a highly overbased $CaCO_3$.

4,164,473

ORGANO MOLYBDENUM FRICTION REDUCING ANTIWEAR ADDITIVES

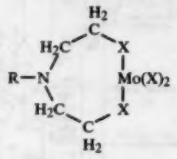
Keith Coupland, Sarnia, and Clinton R. Smith, Camlachie, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 843,963, Oct. 20, 1977, abandoned. This application Jul. 28, 1978, Ser. No. 928,817

Int. Cl.[2] C10M 1/48, 3/42; C07F 00/00; C10M 5/24

U.S. Cl. 252—32.7 E 9 Claims

1. An organo molybdenum complex represented by the formula



wherein R is a substantially hydrocarbyl group containing from 1 to 50 carbon atoms and X is selected from sulfur or oxygen.

4,164,474

PROCESS FOR PRODUCING METAL SALTS OF OIL-SOLUBLE ORGANOSULFONIC ACIDS

Lawrence V. Gallacher, East Norwalk, and Robert G. King, West Redding, both of Conn., assignors to King Industries, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 539,595, Jan. 8, 1975, abandoned. This application Oct. 27, 1976, Ser. No. 736,165

Int. Cl.[2] C10M 1/40; C10L 1/24; C07C 143/24, 143/02

U.S. Cl. 252—33 25 Claims

1. A process for producing a metal salt of an organosulfonic

acid and a metal selected from alkali metals, and alkaline earth metals, said process comprising the steps of:

(i) providing a mixture comprising the organosulfonic acid and at least 2 moles of water per equivalent of said sulfonic acid;

(ii) adding to the mixture a compound of at least one of said metals in the form of a carbonate, in an amount sufficient to provide a molar excess of said compound of at least about 1%;

(iii) reacting and heating the mixture until the carbonate/acid equilibrium point is reached; and

(iv) adding a small amount of up to about 1%, based on the weight of the carbonate, of a compound selected from a metal oxide or metal hydroxide which has a base strength greater than that of bicarbonate ion, sufficient to effect complete neutralization of the remainder of said organosulfonic acid.

4,164,475

MULTI-GRADE 80W-140 GEAR OIL

Richard D. Schieman, Avon Lake, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed May 9, 1975, Ser. No. 576,007
Int. Cl.[2] C10M *1/32*
U.S. Cl. 252—46.7 **1 Claim**

1. In a multi-grade gear oil composition comprising a major proportion of mineral lubricating oil, 5–6 volume percent sulfur- and phosphorous-containing wear additive, 16.6–18.6 volume percent V.I. improver, and 0–2.7 volume percent seal-swell agent, the improvement comprising using as the oil a petroleum-oil stock composed of 20–23 volume percent of a 5.0 centistokes at 210° F. oil, 24–25 volume percent 14.0 centistokes at 210° F. oil, and 26–30 volume percent 25.0 centistokes at 210° F. oil, and from 0.1 to 1.5 volume percent of a dispersant polymer which is an alkyl methacrylate copolymer which has been grafted with a dialkyl amino methacrylate monomer.

4,164,476

DEVELOPER FOR LATENT ELECTROSTATIC IMAGE AND PROCESS FOR PREPARATION THEREOF

Shotaro Watanabe; Fumio Koizumi; Katsutoshi Tozawa, and Shigeru Uetake, all of Hino, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Hachioji, Japan

Division of Ser. No. 805,213, Jun. 9, 1977. This application Jan. 6, 1978, Ser. No. 867,500
Claims priority, application Japan, Jun. 9, 1976, 51-66568
Int. Cl.[2] G03G *9/08*
U.S. Cl. 252—62.1 P **6 Claims**

1. A process for the preparation of a developer for a latent electrostatic image comprising:

(1) mixing 0.01–1.0% by weight of hydrophobic silica fine powder with a one-component developer for a latent electrostatic image having as a main component a magnetic toner obtained by mixing and kneading powders of a magnetic substance uniformly in particles of resin, crushing said mixture into a fine powder, and heat treating said fine powder at a temperature higher than the softening point of said resin to substantially eliminate particles less than 1 micron in diameter, said powders of magnetic substance being exposed to the particle surface of said resin, said magnetic toner being, as a whole, electrically insulating and having a specific resistance of at least 10^{14} ohm-cm and acquiring the electric charge necessary for the formation of an image by mutual friction among the particles; and

(2) classifying said developer mixed with said hydrophobic silica fine powder into portions having a predetermined range of particle diameters.

4,164,477

FUNGICIDAL DETERGENT COMPOSITION

Elmer E. Whitley, Harlingen, Tex., assignor to Chem-X3, Inc., Harlingen, Tex.

Filed Oct. 2, 1978, Ser. No. 947,537
Int. Cl.[2] C11D *3/065, 7/56*
U.S. Cl. 252—99 **6 Claims**

1. A concentrated cleaning composition which when added to water and an oxidizing agent produces a reactive mixture capable of killing and removing and preventing the regrowth of mold and mildew consisting essentially of the following:

Constituent	Range in % by Wt.
water	82.4–97.0
organic acid selected from the group consisting of acetic acid, formic acid, propionic acid, n-hexanoic acid, lactic acid, citric acid, n-butanoic acid, n-pentanoic acid, trimethyl-acetic acid, methoxyacetic acid, cyano-acetic acid, chloracetic acid, and tartaric acid	2.0–10.0
at least one penetrant selected from the group consisting of alkanolamide detergents and the sodium salts of ethylenediamine tetracetic acid	0–0.8
sodium tripolyphosphate	0–0.8
at least one surfactant selected from the group consisting of higher alkyl mononuclear aryl sulfonates, alkyl polyethoxamer detergents, alkanolamine detergents, and alkanolamide detergents	0.1–1.0
fungicide selected from the group consisting of zinc sulfate, zinc acetate, zinc bromide, zinc chloride, zinc iodide, zinc nitrate, zinc bromate and zinc chlorate	0.2–2.0
wetting-dispersing agent consisting of the condensation polymerization product of the reaction of polyglycerol with phthalic anhydride	0.05–1.0
sodium metasilicate degreasant	0–2.0

4,164,478

PROCESS FOR IMPROVING GRANULAR DETERGENTS

Hiroshi Nishio, Chiba; Ryuichi Nakagawa, Narashino, and Takashi Ikeuchi, Funabashi, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1978, Ser. No. 884,837
Claims priority, application Japan, Mar. 18, 1977, 52/29269
Int. Cl.[2] C11D *1/12, 3/12, 11/00*
U.S. Cl. 252—135 **9 Claims**

1. A process for treating detergent granules containing from 10 to 40% by weight of organic, water-soluble, anionic, synthetic surface active agent, from 4 to 20% by weight of water-soluble alkali metal silicate and from 2 to 40% by weight of water-soluble alkali metal carbonate, so that reaction between said alkali metal silicate and carbon dioxide in the ambient atmosphere is inhibited, which comprises: mixing with the preformed detergent granules from 0.3 to 5 parts by weight, per 100 parts by weight of said detergent granules, of a powder of water-insoluble agent selected from the group consisting of magnesium oxide, aluminum hydroxide, calcium carbonate, heavy white carbon and titanium oxide, said agent having an average particle diameter of less than 1.5 microns, and thereby adhering said powder to the surfaces of said granules in the form of an external covering thereon.

4,164,479

METHOD FOR CALCINING NUCLEAR WASTE SOLUTIONS CONTAINING ZIRCONIUM AND HALIDES

Billie J. Newby, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 12, 1978, Ser. No. 868,953
Int. Cl.[2] G21F 9/14
U.S. Cl. 252—301.1 W **6 Claims**

1. In the method of solidifying aqueous nuclear fuel reprocessing waste solutions containing zirconium, fluoride and chloride for long-term storage by adding calcium nitrate to the solution in an amount sufficient to establish a calcium to fluoride mole ratio of at least 0.55, and heating the resulting solution to calcining temperature, thereby calcining the waste solution to form a calcine, the calcium nitrate being present to suppress the volatility of the fluoride during calcination, the improvement wherein aluminum is added to the waste solution before the addition of calcium nitrate, the aluminum being added as a soluble, compatible compound in an amount sufficient to establish an aluminum to fluoride mole ratio of from 0.27 to 0.40 whereby the aluminum reduces the amount of gelatinous solid formed in the solution due to the presence of calcium nitrate and suppresses the volatility of the chloride during calcination of the waste solution.

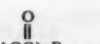
4,164,480

POLYCHROMOPHORIC ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

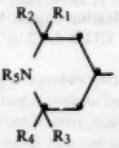
Gether Irick, Jr.; James C. Ownby, and Richard H. S. Wang, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 9, 1978, Ser. No. 868,086
Int. Cl.[2] C07D 211/46; C08K 5/34, 5/35, 5/47
U.S. Cl. 252—402 **24 Claims**

13. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with a stabilizing amount of compounds having the formula:



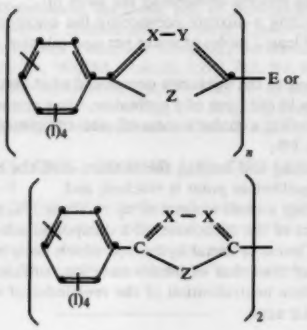
wherein A is a group having the structure



wherein

R_1 and R_2 and R_3 and R_4 are each alkyl having 1–6 carbons; R_1 and R_2 and R_3 and R_4, together with the carbon to which they are bound, form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group; and R_5 is hydrogen, oxyl, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 or 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl;

B is a heterocyclic group having the structures



wherein

X and Y are a carbon atom, a carbon atom containing an alkyl group having 1 to 12 carbon atoms, a carbon atom containing an aryl group having 6 to 10 carbon atoms or a nitrogen atom; Z is an oxygen atom, a sulfur atom, or a nitrogen atom containing a hydrogen atom or a substituted or unsubstituted lower alkyl group having 1 to 12 carbon atoms; I is hydrogen, chloro, bromo, fluoro, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, aryloxy, substituted amino or cyano, said I being present on all positions of the benzenoid rings, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the carbonyloxy group, E is a substituted or unsubstituted branched or unbranched alkylene group containing 1 to 12 carbon atoms or arylene group containing 6 to 18 carbon atoms and n is 1 or 2.

4,164,481

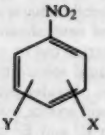
PROCESS OF REGENERATING A NOBLE METAL CATALYST USED IN THE REDUCTION OF ORGANIC NITRO COMPOUNDS

King W. Ma; Irvin W. Potts, and Russell A. Malek, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 27, 1978, Ser. No. 872,986
Int. Cl.[2] B01J 23/96, 21/20
U.S. Cl. 252—412 **10 Claims**

1. A process for regenerating the activity of a noble metal catalyst which has become deactivated in the reduction of organic compounds with nitro moieties to the corresponding aminated derivative, comprising the sequential steps of: (a) contacting said deactivated catalyst with a liquid, polar organic solvent having from 1 to 10 carbon atoms; (b) contacting the catalyst with a liquid, aqueous solution of an alkali metal hydroxide at a temperature from about 20° C. to about 150° C.; (c) contacting the catalyst with an oxygen-containing gas at a temperature from about 20° C. to about 150° C. prior to or following Step (b); and (d) contacting said catalyst once again with a liquid, polar organic solvent having from 1 to 10 carbon atoms, so as to effect regeneration of the deactivated catalyst.

10. A process for regenerating the activity of a palladium catalyst supported on carbon with a concentration from about 0.5 percent to about 2 percent palladium by weight, where said catalyst has become deactivated to a level of activity less than 50 percent of that of a broken in, new catalyst in the reduction of compounds of the formula



wherein X and Y are, independently, hydrogen, hydroxyl, nitro, alkyl of 1 to 3 carbon atoms, alkoxyl of 1 to 3 carbon atoms, hydroxyalkyl of 1 to 3 carbon atoms, amino, or hydroxyamino moieties and at least one of the X and Y substituents is located in an ortho or para position relative to the nitro group, said process comprising the sequential steps of: (a) contacting said deactivated catalyst with a liquid, polar organic solvent having from 1 to 10 carbon atoms; (b) contacting the catalyst under a substantially inert atmosphere slightly above atmospheric pressure with a liquid, aqueous solution of sodium hydroxide with a concentration of at least about 0.1 normal and at a temperature from about 50° C. to about 150° C.; (c) washing the hydroxide-treated catalyst with water until the wash water is substantially neutral; (d) contacting the water-washed catalyst with an oxygen-containing gas at a temperature from about 75° C. to about 150° C.; and (e) contacting said oxygen-treated catalyst once again with a liquid, polar organic solvent having from 1 to 10 carbon atoms, so as to effect regeneration of the deactivated catalyst to a level of activity at least 70 percent of the level of activity of a broken in, new catalyst.

4,164,482

ABSORBENT FOR WATER PURIFICATION AND PROCESS FOR PREPARING SAME

Harald Berger; Karl-Ernst Quentin, both of Kelkheim, and Ludwig Weil, Munich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 13, 1977, Ser. No. 806,273

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1976, 2626732

Int. Cl.[2] **B01J** *21/18, 29/06, 31/02*

U.S. Cl. 252—428 **8 Claims**

1. Absorbent for water purification consisting essentially of organic polymer and inorganic absorbing matter, wherein the two components are linked with each other epitactically.

3. Absorbent as claimed in claim 1, wherein the inorganic absorbing matter is aluminum oxide, silica gel, a zeolite, active carbon, bleaching earth, bentonite, fuller's earth, activated bauxite, or activated kieselguhr.

4,164,483

RARE EARTH EXCHANGE X ZEOLITES, CATALYST EMPLOYING THE SAME AND METHOD FOR PRODUCING THE SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 718,167, Sep. 9, 1976, Pat. No. 4,058,484. This application Jun. 20, 1977, Ser. No. 808,268

Int. Cl.[2] **B01J** *29/06*

U.S. Cl. 252—455 Z **9 Claims**

1. An X type faujasite zeolite having in excess of 0.9 equivalents of rare earth cations per gram atom of aluminum in the zeolite and less than 0.1 equivalents of Na per gram atom of aluminum in the zeolite, the cation density composed of Na and rare earth being substantially equal to one equivalent per gram atom of the aluminum in the exchanged zeolite.

7. The process of exchanging a sodium X type zeolite which comprises forming a water slurry of rare earth salts and sodium X the ratio of the equivalents of rare earth cations per gram atom of aluminum in the zeolite being above about 1 and adjusting the pH of the mixture to be at a pH of about 5 to about 6 to form a reaction mixture and heated at a superatmospheric pressure and at a temperature of about 250° F. to 400° F. to introduce into the zeolite in excess of 0.9 equivalents of rare earth cation per gram atom of aluminum in the exchanged zeolite and washing the exchanged zeolite.

4,164,484

PROCESS FOR RECOVERING POLYOLEFIN AND POLYSTYRENE MATERIALS BY DISSOLVING, VACUUM-EVAPORATING AND PRECIPITATING

Masahiro Tokuda; Tadaaki Tamura; Hikokusu Kajimoto; Takafumi Shimada, all of Hiroshima; Toshiya Oyamoto, Mihara, and Setsumi Ochiai, Fukuyama, all of Japan, assignors to Director-General, Masao Kubota of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jan. 4, 1978, Ser. No. 866,857

Int. Cl.[2] **C08J** *11/04*

U.S. Cl. 260—2.3 **4 Claims**

1. A process for recovering polyolefin and polystyrene from plastic wastes which comprises;

dissolving a mixture of plastics containing polyolefin plastics using a hydrocarbon solvent;

vacuum-evaporating the solvent of the solution to thereby cause precipitation of the polyolefin plastics contained in the solution;

separating and collecting the major portion of the plastics thus precipitated;

dividing further the resulting separated solution into a concentrated solution of the precipitate yet remaining admixed therein and the phase of a solution not substantially containing the precipitate;

recycling and using again the concentrated solution of the precipitate as a solution for dissolving said mixture of plastics; and

removing the solvent from the phase of a solution not substantially containing the precipitate to thereby recover polystyrene plastics.

4,164,485

GLASS FIBER COATING COMPOSITION FOR GLASS FIBER FILAMENT BUNDLES TO PRODUCE REINFORCING MEMBERS FOR ELASTOMERIC ARTICLES

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 762,538, Jan. 26, 1977, abandoned, which is a division of Ser. No. 604,367, Aug. 13, 1975, which is a continuation-in-part of Ser. No. 535,389, Dec. 23, 1974, abandoned. This application Feb. 10, 1978, Ser. No. 876,588

Int. Cl.[2] **C08L** *7/02, 25/10, 61/12*

U.S. Cl. 260—5 **8 Claims**

1. A glass fiber aqueous coating composition, said glass fibers being useful for reinforcing elastomers, comprising in part by weight on a dry solids basis, and also the latex on the basis of 100 parts of total elastomer:

10–30 neoprene latex

70–90 styrene-butadiene-vinylpyridine latex

4–20 resorcinol formaldehyde resin

2–6 resorcinol

1–3 formaldehyde

up to 1.5 hexamethylene tetraamine.

4,164,486

RADIATION-CURABLE PREPOLYMER

Kin-ichi Kudo, Chiba; Katsuyoshi Nakamura, and Takatoshi Tazawa, both of Ichihara, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed Jan. 3, 1978, Ser. No. 866,343

Int. Cl.[2] **C09D** *3/64, 3/66, 3/68*

U.S. Cl. 260—22 TN **6 Claims**

1. A substantially NCO-free radiation-curable prepolymer which is the reaction product of (A) an organic diisocyanate

with (B) a low-molecular weight hydroxyl-containing unsaturated monomer having both a hydroxyl group and a polymerizable double bond and (C) a polyester polyol containing 2 to 8 hydroxyl groups per molecule, the polyester polyol (C) having a number average molecular weight of 400 to 6,000 and a hydroxyl equivalent weight of 200 to 3,000 and containing a dimer acid residue derived from 9 to 70% based on the weight of the total weight of the starting materials, of dimer acid and an alcohol residue derived from 20 to 75%, based on the total weight of the starting materials, of an ethylene oxide or propylene oxide adduct of bisphenol A with the proportion of the oxide added being 2 to 4 moles per mole of bisphenol A.

4,164,487

WATER-THINNABLE MIXTURES OF BASE-NEUTRALIZED PRODUCTS OF REACTION OF H_3PO_4 WITH POLYETHER EPOXIDES AND WITH OTHER TYPE EPOXIDES

Patrick H. Martin, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 753,765, Dec. 23, 1976, abandoned, and a continuation-in-part of Ser. No. 753,763, Dec. 23, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,167

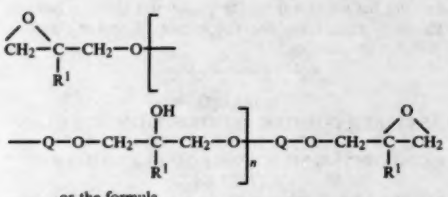
Int. Cl.[2] C08L *63/00*

U.S. Cl. 260—29.2 EP **33 Claims**

1. The process for preparing water-thinnable, base-salified reaction products of orthophosphoric acid and polyether epoxides which comprises:

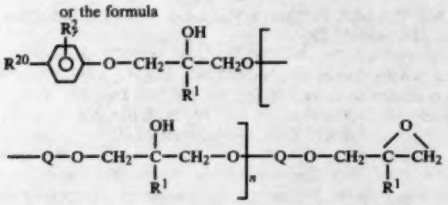
(I) reacting orthophosphoric acid with

(1) a polyether epoxide resin E^1 consisting essentially of molecules, each of which is of the formula



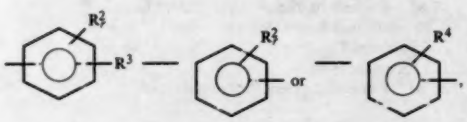
(a)

or the formula



(q)

wherein Q, independently, in each occurence, is



n is an integer of from 0 to 40, r is zero, 1 or 2 and, independently in each occurrence;

R^1 is H, methyl or ethyl,

R^2 is —Br, —Cl or a C_1 to C_4 alkyl or alkenyl group,

R^3 is a C_1–C_4 alkylene or alkenylene group, $>C(CF_3)_2$, —CO, —SO_2—, —S—, —O— or a valence bond, and

R^4 is —Br, —Cl or a C_1 to C_4 alkyl or alkenyl group,

R^{20} is H or alkyl of 1 to 12 carbons; and

(2) E^2, a vicinal epoxide, other than one of formula (a) or (q), which has an EEW (epoxide equivalent weight) within the range of from about 90 to about 2000 and is convertible to a water-dispersible material by reaction with orthophosphoric acid and neutralization with a base,

said reaction being carried out by contacting E^1 and E^2 with an orthophosphoric acid source material and from 0 to 25 molecular proportions of water per molecular proportion of H_3PO_4 provided by said source material until the fraction of the oxirane groups in E^1 and E^2 converted is at least sufficient to render the resulting mixed product water-thinnable when contacted with a base, the amount of orthophosphoric acid included as such in said source material, or obtainable therefrom by hydrolysis, being such as to provide at least 0.3 P—OH groups per oxirane group, and the mole ratio of E^1 to E^2 epoxides being within the range of from about 0.1 to about 100, and

(II) contacting the resulting mixed reaction product with at least enough of a base to render it water-thinnable.

4,164,488

AQUEOUS THERMOSETTING ACRYLIC ENAMEL

Basil V. Gregorovich, and James J. Sanderson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 641,374, Dec. 17, 1975, abandoned, which is a continuation of Ser. No. 456,142, Mar. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 307,004, Nov. 16, 1972, abandoned. This application Jan. 3, 1978, Ser. No. 866,649

Int. Cl.[2] C08L *61/28, 33/12*

U.S. Cl. 260—29.4 UA **8 Claims**

1. An aqueous thermosetting acrylic enamel coating composition free of external surfactants which comprises 10–60% by weight of film-forming constituents and correspondingly 90–40% by weight of water and up to 20% by weight of a solvent for the film-forming constituents; wherein the film-forming constituents consist essentially of

(1) 60–90% by weight, based on the weight of the film-forming constituents, of an acrylic polymer having a uniformity factor of 80–95% and consists essentially of polymerized monomers of about

(a) 50–60% by weight, based on the weight of the acrylic polymer, of methyl methacrylate,

(b) 30–40% by weight, based on the weight of the acrylic polymer, of butyl acrylate;

(c) 5–10% by weight, based on the weight of the acrylic polymer, of hydroxyethyl acrylate;

(d) 4–12% by weight, based on the weight of the acrylic polymer, of acrylic acid or methacrylic acid;

wherein 30–50% by weight of the acrylic polymer is dispersed and has a particle size of 0.01–0.10 microns and the remaining 50–70% is soluble and dissolved and the polymer has a carboxyl to hydroxyl ratio of 1:0.3 to 1:1.5, an acid number of about 35–80 and a weight average molecular weight of 10,000–50,000, and

(2) 10–40% by weight, based on the weight of the film-forming constituent, of a hexa kis (methoxymethyl) melamine; and the composition contains sufficient amine to provide a pH of about 6–9.

4,164,489

CONTINUOUS EMULSION POLYMERIZATION OF VINYL ACETATE AND ETHYLENE

Wiley E. Daniels, Easton, Pa., and William E. Lenney, Middlesex, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 24, 1978, Ser. No. 899,421

Int. Cl.[2] C08F *210/02;* **C08L** *23/04*

U.S. Cl. 260—29.6 R **12 Claims**

1. In a continuous process for forming a latex comprising the steps of polymerizing a reaction mixture comprising vinyl acetate, ethylene, water, a free radical initiator, and a protective colloid under pressure to form a latex containing a copoly-

mer consisting essentially of vinyl acetate, ethylene and 0–10% of other vinyl monomer, the improvement which comprises:

(a) continuously charging said reaction mixture to a polymerization vessel;

(b) conducting an initial polymerization of said reaction mixture in said polymerization vessel in the presence of a seed latex for a sufficient time and sufficient temperature to form a vinyl acetate ethylene copolymer, said copolymer having a glass transition temperature of from minus 20° C. to plus 10° C.; and

(c) continuously removing latex formed in (b) from the polymerization vessel at a rate commensurate with that of step (a) when the unreacted vinyl acetate content by weight of the latex is from 5–20% of said latex formed in (b) and then effecting post-polymerization of the unreacted vinyl acetate in the removed latex at an ethylene pressure of not more than about 300 psia until the unreacted vinyl acetate in the removed latex is not more than 1% by weight.

4,164,490

BITUMEN COMPOSITIONS CONTAINING POLYMERS

Germain Hagenbach, Vernaison, and Pierre Cazaux, Communay, both of France, assignors to Elf Union, Paris, France

Filed Oct. 7, 1977, Ser. No. 840,326

Claims priority, application France, Oct. 8, 1976, 76 30316

Int. Cl.[2] C08K *5/01;* C08L *95/00*

U.S. Cl. 260—33.6 UA **9 Claims**

1. Bitumen compositions comprising 90 to 99.9% by weight of a bitumen, the softening point of which is between 2° and 120° C., and 0.1 to 10% by weight of a norbornene homopolymer having an average molecular weight between 1,000,000 and 3,000,000.

4,164,491

THERMALLY CURABLE SILICONE RUBBER COMPOSITIONS

Kunio Itoh, and Takeshi Fukuda, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Toyko, Japan

Filed Jan. 24, 1978, Ser. No. 871,849

Claims priority, application Japan, Jan. 27, 1977, 52-7308

Int. Cl.[2] C08L *83/04*

U.S. Cl. 260—37 SB **9 Claims**

1. A thermally curable silicone rubber composition consisting essentially of

(a) 100 parts by weight of a diorganopolysiloxane gum,

(b) from 10 to 200 parts by weight of a polyurethane elastomer having a softening point not lower than 100° C.,

(c) from 10 to 400 parts by weight of a reinforcing filler, and

(d) from 0.1 to 10 parts by weight of an organic peroxide.

4,164,492

NOVEL CATALYST FOR CURING POLYESTER RESINS AND METHOD FOR DETERMINING THE DEGREE OF CURE IN POLYESTER AND EPOXY RESIN SYSTEMS

Troy L. Cooper, Canal Fulton, Ohio, assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Mar. 14, 1978, Ser. No. 886,535

Int. Cl.[2] C08K *5/23*

U.S. Cl. 260—40 R **8 Claims**

1. A novel pigmented organic peroxide catalyst for the polymerization of polyester resins comprising:

from about 48–50% by weight of benzoyl peroxide;

a suitable plasticizer; and

from about 0.03 to about 0.16 percent by weight of a pigment capable of imparting a uniform color to said catalyst and to a polyester resin with which said catalyst is mixed and of substantially losing said color when the catalyst-resin mixture has cured.

4,164,493

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING POLYPENTENAMER

Glenn D. Cooper; Arthur Katchman, both of Delmar, and Charles P. Shank, Averill Park, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 5, 1978, Ser. No. 939,205

Int. Cl.[2] C08L *71/04*

U.S. Cl. 260—42.18 **38 Claims**

1. A thermoplastic composition which, after molding has good impact strength, said composition comprising:

(a) from about 1 to 99 parts by weight of a polyphenylene ether resin, and

(b) from about 1 to 99 parts by weight of polypentenamer, based on the total weight of the composition.

4,164,494

PIPERIDINYL PHOSPHATE ULTRAVIOLET STABILIZERS FOR ORGANIC COMPOSITIONS

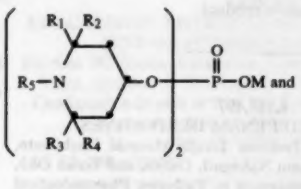
Gether Irick, Jr., and Richard H. S. Wang, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

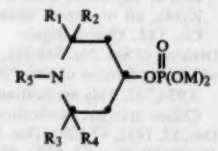
Filed May 16, 1978, Ser. No. 906,398

Int. Cl.[2] C08K *5/52*

U.S. Cl. 260—45.75 R **15 Claims**

1. An organic composition susceptable to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of a mixture of piperidinyl phosphates having the formula:





R_1 and R_2 are each alkyl having 1–6 carbons; R_3 and R_4 are each alkyl having 1–6 carbons or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group; and R_5 is hydrogen, oxy, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl, and M is either hydrogen or a metal ion selected from the group consisting of Li, Na, K, Mg, Ca, Ba, Mn, Co, Ni, Sn, Zn, and Ce, wherein at least one M radical is one of said metal ions and when the valence of M is greater than one, the available valency requirements of M are filled by a suitable anion selected from the group consisting of acetoxy, benzoyloxy, and chloro.

4,164,495

METHOD OF RECOVERING IMMUNOGLOBULIN USING A POLYOL AND AN ALKANOIC ACID

Jorgen F. Hansen, Rodovre, Denmark, assignor to Nordisk Insulinlaboratorium, Gentofte, Denmark

Continuation of Ser. No. 782,255, Mar. 28, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,456

Claims priority, application Denmark, Apr. 6, 1976, 1628/76

Int. Cl.[2] A61K *37/04, 37/06;* **C07G** *7/00*

U.S. Cl. 260—112 B **6 Claims**

1. A method of recovering purified immunoglobulin suitable for intravenous administration wherein blood plasma, serum or a fraction thereof is subjected to a fractionated precipitation using a combination of polycondensed polyol and a mono or polyalkanoic acid having from 4 to 12 carbon atoms as a precipitant, the fractionating process being performed at approximately room temperature.

4,164,496

PREPARATION OF ALBUMIN USING PEG AND EDTA

Yu L. Hao, Potomac, Md., assignor to American National Red Cross, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 935,922

Int. Cl.[2] C07G *7/00*

U.S. Cl. 260—122 **2 Claims**

1. A method for the preparation of albumin comprising:
(a) diluting plasma in liquid form with an equal volume of a NaCl solution containing disodium ethylene dinitrilo tetraacetate and a stabilizer;
(b) adjusting the pH of the plasma solution resulting from step (a) to about 6.2;
(c) heating the plasma solution from step (b) at a temperature of approximately 60° C. for about 1¼ hours;
(d) cooling the plasma solution to about 10° C.;
(e) precipitating impurities from the solution with polyethylene glycol at a concentration of about 18–20% with the albumin remaining in the supernatant;
(f) isoelectrically precipitating albumin from said supernatant at a pH of about 4.6; and
(g) recovering the albumin product.

4,164,497

2-SUBSTITUTED PENAM DERIVATIVES

Takashi Kamiya, Suita; Tsutomu Teraji; Masashi Hashimoto, both of Toyonaka; Osamu Nakaguti, Osaka, and Teruo Oku, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

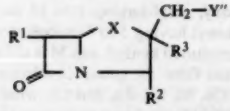
Division of Ser. No. 648,491, Jan. 12, 1976, Pat. No. 4,084,409, which is a division of Ser. No. 407,962, Oct. 19, 1973, Pat. No. 3,954,732. This application Jan. 6, 1978, Ser. No. 867,623

Claims priority, application Japan, Nov. 8, 1972, 47-112348; Dec. 12, 1972, 47-1201; Dec. 12, 1972, 47-128657; Dec. 20, 1972, 47-128659; Dec. 22, 1972, 47-2270; Aug. 1, 1973, 48-87108

Int. Cl.[2] C07D *499/44*

U.S. Cl. 260—239.1 **12 Claims**

1. A compound of the general formula:



wherein R^1 is a conventional, pharmaceutically acceptable penicillin acylamino, R^2 is carboxy or a conventionally protected carboxy, X is —S— or

R^3 is lower alkyl and Y''' is a residue of a strong nucleophile selected from the group consisting of thiocyanato, lower alkyanoylthio and piperidinothiocarbonylthio.

4,164,498

4H-S-TRIAZOLO[4,3-a][1,5]BENZODIAZEPIN-5-ONES

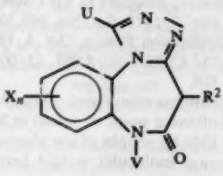
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 778,823, Mar. 17, 1977, Pat. No. 4,133,809, which is a division of Ser. No. 365,012, May 29, 1973, abandoned. This application Sep. 21, 1978, Ser. No. 944,531

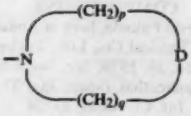
Int. Cl.[2] C07D *487/14*

U.S. Cl. 260—239.3 T **5 Claims**

1. A compound of the formula

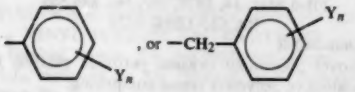


wherein R^2 is H; alkyl of 1–4 carbons optionally substituted by amino, mono-lower alkyl amino, di-lower alkyl amino, cyclic imines of formula

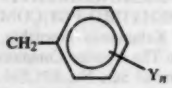


where D is methylene, oxygen or N—R^{10} and where p and q are the same or different and are the integers 1, 2, and 3 provided that p+q is at least 1; hydroxy; alkoxy of 1–6 carbons or

where R^5 is alkyl of 1–5 carbons optionally substituted by phenyl or X-substituted phenyl; or R^5 is phenyl optionally substituted by 1 or more X-substituents; R^{10} is hydrogen, alkyl of 1–4 carbons or phenyl optionally substituted by X, V is hydrogen,

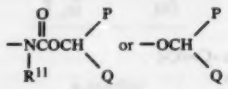


X and Y are the same or different and are hydrogen, F, Cl, Br, trifluoromethyl, alkyl of from 1–6 carbons, alkoxy of from 1–6 carbons, nitro, cyano, amino, alkanoylamino of 1–4 carbons, alkylthio of 1–6 carbons, alkylsulfinyl of 1–6 carbons or alkyl sulfonyl of 1–6 L carbons; n is 0, 1 or 2; and when V is hydrogen or



U is H; phenyl; X-substituted phenyl wherein X is as defined below; 2, 3- or 4-pyridyl, or cycloalkyl of 3–5 carbons; alkyl of 1 to 4 carbons or phenyl-alkyl, and when V is

U is alkyl of from 1 to 4 carbons substituted by the groups,



where P and Q are the same or different and are hydrogen, phenyl, X-substituted phenyl, naphthyl or X-substituted naphthyl, with the proviso that at least one of P and Q is one of the foregoing aryl radicals, and R^{11} is hydrogen or alkyl of from 1 to 4 carbons.

4,164,499

RIFAMYCIN COMPOUNDS

Vittorio Rossetti; Leonardo Marsili, and Carmine Pasqualucci, all of Milan, Italy, assignors to Archifar Laboratori Chimico Farmachologici S.p.A., Rovereto, Italy

Filed Aug. 12, 1977, Ser. No. 825,165

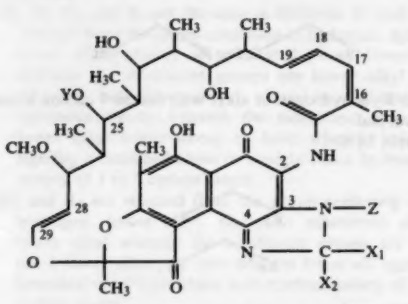
Claims priority, application Italy, Sep. 30, 1976, 5209 A/76

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

Int. Cl.[2] C07D *498/18*

U.S. Cl. 260—239.3 P **1 Claim**

1. A rifamycin compound having the formula



(III)

and 16, 17, 18, 19 tetrahydroderivatives and 16, 17, 18, 19, 28, 29 hexahydroderivatives thereof, wherein:

Y is selected from the group consisting of —H and —$COCH_3$;

Z is selected from the group consisting of alkyl having 1–3 carbon atoms, cycloalkyl having 3–6 carbon atoms and phenyl substituted with one radical selected from the group consisting of halogen and methyl;

X_1 is methyl;

X_2 is selected from the group consisting of alkyl having 1–3 carbon atoms, carboxyalkyl having 3 or 4 carbon atoms, and halomethyl; or

X_1 and X_2, when taken with the atom of carbon to which they are attached, form a ring selected from the group consisting of a cycloalkyl ring having 5 or 6 carbon atoms, a piperidine ring and an N-substituted piperidine ring, the nitrogen atom being in the 4-position of said unsubstituted or N-substituted piperidine ring with respect to the spiro C-atom, said substituent selected from the group consisting of alkyl having 1–4 carbon atoms, cycloalkyl having 6 carbon atoms and benzyl.

4,164,500

PYRAZOLINE COMPOUNDS

Manfred Patsch, and Albert Hettche, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

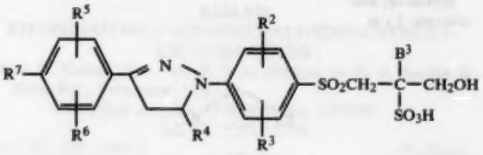
Division of Ser. No. 702,975, Jul. 6, 1976, Pat. No. 4,129,563. This application Apr. 21, 1978, Ser. No. 898,629

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534180; Aug. 6, 1975, 2535095; Nov. 11, 1975, 2550548

Int. Cl.[2] C07D *231/06*

U.S. Cl. 260—239.9 **3 Claims**

1. A compound which in the form of the free acid corresponds to the formula



in which

B^3 is hydrogen or C_1 to C_4 alkyl,

R^2, R^3, R^5, R^6 and R^7 are independently hydrogen, chlorine, bromine, fluorine, methyl, ethyl, methoxy or ethoxy and

R^4 is hydrogen, C_1 to C_4 alkyl, benzyl, phenylethyl, phenyl or phenyl substituted by chlorine, bromine, methyl, ethyl, methoxy, ethoxy, cyano or hydroxysulfonyl.

4,164,501

2-DECARBOXY-2-HYDROXYMETHYL-TRANS-4,5,13,14-TETRADEHYDRO-PGI$_1$COMPOUNDS

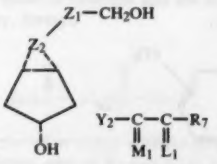
Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,536, Aug. 3, 1977. This application Jun. 14, 1978, Ser. No. 915,431

Int. Cl.[2] C07D *307/93*

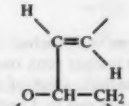
U.S. Cl. 260—346.22 **27 Claims**

1. A prostacyclin analog of the formula



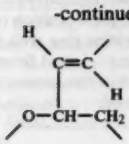
wherein Y_2 is —C≡C—;

wherein Z_2 is

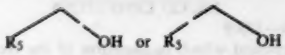


(1)

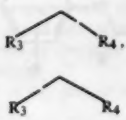
-continued



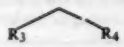
wherein Z_1 is
(1) $-(CH_2)_g-CH_2-CH_2-$, or
(2) $-(CH_2)_g-CH_2-CF_2-$,
wherein g is the integer zero, one, or 2;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive; and
wherein L_1 is

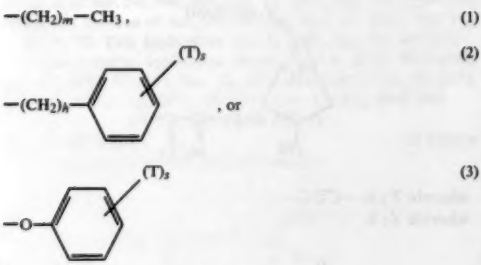


or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein R_7 is



(1) $-(CH_2)_m-CH_3$,
(2) $-(CH_2)_h-$ with $(T)_s$, or
(3) $-O-$ with $(T)_s$

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive s is the integer zero, one, 2 or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

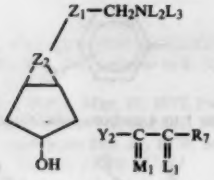
4,164,502

2-DECARBOXY-2-AMINOMETHYL-TRANS-4,5,13,14-TETRADEHYDRO-PGI$_1$ COMPOUNDS

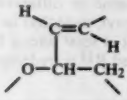
(2) **Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

Continuation-in-part of Ser. No. 821,536, Aug. 3, 1977. This application Jun. 14, 1978, Ser. No. 915,429
Int. Cl.^{2} C07D *307/93*
U.S. Cl. 260—346.73 **27 Claims**

1. A prostacyclin analog of the formula

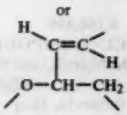


wherein Y_2 is -C≡C-;
wherein Z_2 is



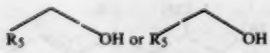
(1)

or

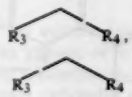


(2)

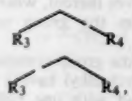
wherein Z_1 is
(1)-$(CH_2)_g$-CH_2-CH_2-, or
(2)-$(CH_2)_g$-CH_2-CF_2-,
wherein g is the integer zero, one, or 2;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive; and
wherein L_1 is

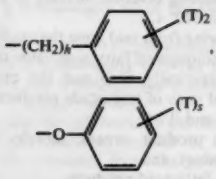


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; and
wherein R_7 is

(1)-$(CH_2)_m$-CH_3,



(2)

(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl; and the pharmacologically acceptable acid addition salts thereof.

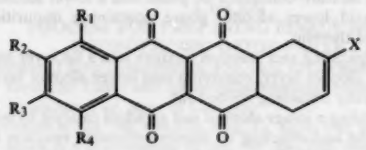
4,164,503

QUINONOID INTERMEDIATES FROM CHLOROPRENE

Andrew S. Kende, Pittsford, N.Y.; Yuh-Geng Tsay, San Jose, Calif., and Takuya Furuta, Rochester, N.Y., assignors to Research Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,511
Int. Cl.[2] C07C *49/72, 49/74, 49/80*; C09B *3/82*
U.S. Cl. 260—365 **28 Claims**

1. A compound of the formula



(II)

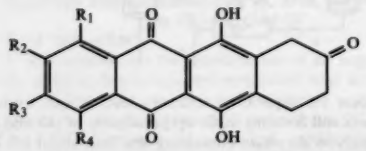
wherein:

X is halo,

R_1, R_2, R_3, and R_4 are the same or different, R_1 and R_4 are selected from the group consisting of hydrogen, hydroxy, lower alkyl, phenyl or substituted phenyl-lower alkyl wherein the substituent groups are lower alkyl lower alkoxy or halo, lower alkoxy, phenyl-or substituted phenyl-lower alkoxy wherein the substituent groups are lower alkyl lower alkoxy or halo, wherein lower alk signifies a branched chain or straight chain hydrocarbon moiety of 1 to 5 carbon atoms,

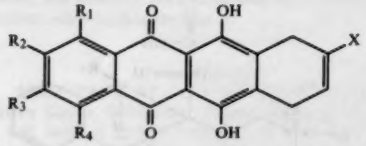
R_2 and R_3 are selected from the group consisting of the hydrogen, lower alkyl, phenyl-or substituted phenyl-lower alkyl wherein the substituent groups are lower aikyl, lower alkoxy or halo wherein lower alk signifies a branched or straight chain hydrocarbon moiety of 1 to 5 carbon atoms.

25. A process for the preparation of a compound having the formula



(IV)

which comprises treating a compound having the formula



(III)

wherein:

R_1, R_2, R_3, R_4, and X are as in claim **1**

with substantially anhydrous strong mineral acid at a temperature of between −5° C. and + about 25° C.

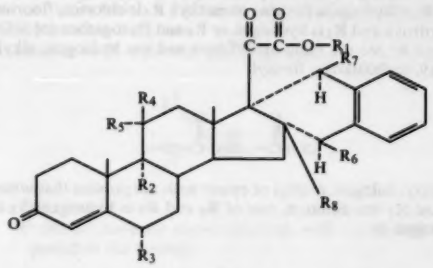
4,164,504

STEROIDAL[16α,17-b]NAPHTHALENO-21-CARBOXYLIC ACID ESTERS

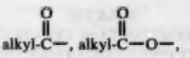
Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 26, 1978, Ser. No. 919,020
Int. Cl.[2] C07J *5/00*
U.S. Cl. 260—397.1 **19 Claims**

1. A steroid having the formula



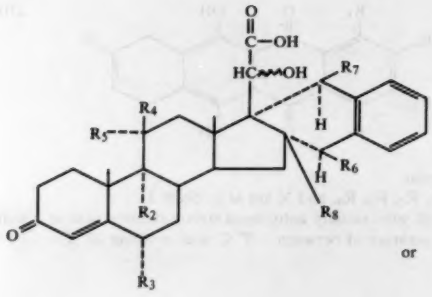
or the 1,2-dehydro derivative thereof, wherein R_1 is alkyl of 1 to 10 carbon atoms, aryl or arylalkyl; R_2 is hydrogen or halogen; R_3 is hydrogen, fluorine or methyl; R_4 is chlorine, fluorine or hydroxy and R_5 is hydrogen or R_4 and R_5 together are =O; R_6 and R_7 are the same or different and are hydrogen, alkyl, alkoxy, carboalkoxy, formyl,



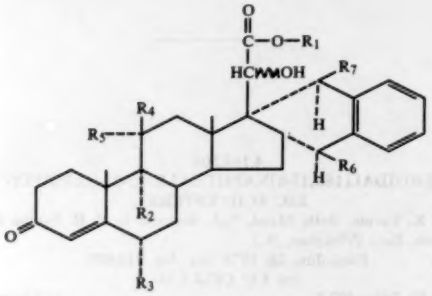
hydroxy, halogen, phenyl or cyano with the proviso that when R_6 and R_7 are different, one of R_6 and R_7 is hydrogen; R_8 is hydrogen or

wherein R_9 and R_{10} are the same or different and are hydrogen or alkyl.

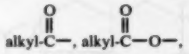
19. A steroid having the formula



or



or the 1,2-dehydro derivative thereof, wherein R_1 is alkyl of 1 to 10 carbon atoms, aryl or arylalkyl; R_2 is hydrogen or halogen; R_3 is hydrogen, fluorine or methyl; R_4 is chlorine, fluorine or hydroxy and R_5 is hydrogen or R_4 and R_5 together are =O; R_6 and R_7 are the same or different and are hydrogen, alkyl, alkoxy, carboalkoxy, formyl,



hydroxy, halogen, phenyl or cyano with the proviso that when R_6 and R_7 are different, one of R_6 and R_7 is hydrogen; R_8 is hydrogen or

wherein R_9 and R_{10} are the same or different and are hydrogen or alkyl.

4,164,505

FLOW PROCESS FOR CONJUGATING UNCONJUGATED UNSATURATION OF FATTY ACIDS

Kenneth E. Krajca, Lynn Haven, Fla., assignor to Sylvachem Corporation, Jacksonville, Fla.

Filed Jul. 8, 1977, Ser. No. 814,139
Int. Cl.[2] C09F 7/08; C11C 3/14
U.S. Cl. 260—405.6 **19 Claims**

1. A flow process for conjugating unconjugated unsaturation of fatty acids in feedstock containing same and controlling the cis/trans to trans/trans ratio of the resulting conjugated fatty acid product in the presence of requisite aqueous alkali metal hydroxide for providing a minor proportion of free alkali in the resulting reaction mixture, and the dissolution of the resulting alkali metal soap in the aqueous phase of said reaction mixture which comprises:

continuously charging said feedstock, said alkali metal hydroxide, and water into a flow reaction zone maintained under at least autogenous pressure;

therein heating the resulting reaction mixture to a temperature of about 200° to 370° C.;

continuously withdrawing from said zone the crude product stream when the unconjugated fatty acid value therein has been reduced to practically zero and the cis/trans to trans/trans fatty acid ratio of said crude product stream is between about 50:1 and 0.1:1;

acidulating the crude product stream, thereby springing crude fatty acid product; and

recovering said crude fatty acid product.

4,164,506

PROCESS FOR PRODUCING LOWER ALCOHOL ESTERS OF FATTY ACIDS

Yoshiharu Kawahara, Osaka, and Toshio Ono, Wakayama, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1978, Ser. No. 884,835
Claims priority, application Japan, Mar. 17, 1977, 52-29709
Int. Cl.[2] C11C 3/02; C09F 5/08
U.S. Cl. 260—410.9 R **13 Claims**

1. A process for producing lower alcohol esters of fatty acids from an unrefined fat containing impurities including free fatty acids, polypeptides and phospholipids, which comprises the steps of:

(1) reacting the free fatty acids of said unrefined fat with a lower alcohol, in the presence of an acid catalyst, to esterify said free fatty acids, the amount of said lower alcohol present in the reaction mixture at the end of the esterification reaction being an amount greater than the amount of said lower alcohol that can be dissolved in said fat whereby, at the end of the esterification reaction, the reaction mixture contains a fat phase and a lower alcohol phase, said lower alcohol phase containing impurities dissolved therein;

(2) then separating said reaction mixture into a fat layer and a lower alcohol layer, removing said lower alcohol layer and thereby obtaining refined fat;

(3) then adding a lower alcohol and an alkali catalyst to said refined fat and effecting an interesterification reaction to form lower alcohol esters of the fatty acids in said refined fat, and then recovering said lower alcohol esters.

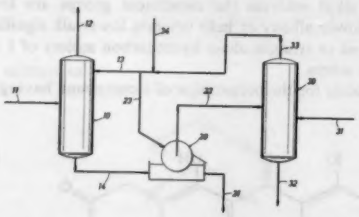
4. A process as claimed in claim **1**, in which said lower alcohol is methyl alcohol.

4,164,507

PROCESS FOR SEPARATION OF SALT FROM HEAVY ENDS WASTES OF GLYCERINE MANUFACTURE

George C. Blytas, and Carl H. Deal, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 13, 1978, Ser. No. 924,412
Int. Cl.[2] C02B 1/20
U.S. Cl. 260—412.5 **7 Claims**



1. A process for separating sodium chloride salt from a glycerine foots still bottoms made up principally of salt and an organic polyglyceride phase containing less than about 6% by weight water which comprises:

(a) mixing the still bottoms with n-butanol in a n-butanol:still

bottoms weight ratio of from about 0.8:1 to about 3:1 at a temperature in the range of 90° to 120° C. thereby precipitating substantially all of the salt present in the still bottoms;

(b) separating the precipitated salt from the still bottoms to afford a substantially salt-free polyglyceride phase containing the n-butanol and a solid salt phase substantially free of polyglycerides;

(c) cooling the substantially salt-free polyglyceride phase to a temperature below about 65° C. thereby phase separating the n-butanol from the polyglyceride phase without further precipitation of salt;

(d) separating the phase separated n-butanol obtained in step (c) and recycling said separated n-butanol to step (a) to effect further salt precipitation from the still bottoms.

4,164,508
FORMYL ALKENOIC ACIDS

Francesco Siclari, Barlassina Milan, and Pietro P. Rossi, Garlasco Pavia, both of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Viscosa S.p.A., Italy

Division of Ser. No. 486,992, Jul. 10, 1974, Pat. No. 4,085,127. This application Mar. 13, 1978, Ser. No. 885,475

Claims priority, application Italy, Jul. 11, 1973, 26479 A/73

Int. Cl.[2] C11C *1/00*

U.S. Cl. 260—413 **2 Claims**

1. An omega-formyl alkenoic acid containing 8, 10 or 12 carbon atoms and selected from the group consisting of 11-formyl-4,8-undecadienoic acid, 11 formyl-4-undecenoic acid, 11-formul-8-undecenoic acid, 7-formyl-4-heptenoic acid, 9-formyl-4-nonenoic acid, 9-formyl-6-nonenoic acid, and mixtures thereof.

4,164,509
PROCESS FOR PREPARING FINELY DIVIDED HYDROPHOBIC OXIDE PARTICLES

Siegmar Läufer, Rheinfelden, Fed. Rep. of Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 496,676, Aug. 12, 1974, Pat. No. 4,068,024, which is a continuation of Ser. No. 201,320, Nov. 23, 1971, abandoned. This application Nov. 1, 1977, Ser. No. 847,508

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1970, 2057730

The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.

Int. Cl.[2] C07F *7/04, 7/18*

U.S. Cl. 260—448.8 R **1 Claim**

1. A finely divided hydrophobic and lipophilic silicon dioxide particle practically free of silanol groups on its surface, said particle having chemically bonded thereto alkoxy or aryloxy groups sufficient to render said particle practically incapable of being wetted with water at standard temperature, said particle having proton affinity sufficient to result in said particle being wetted after extended contact with boiling water.

4,164,510
PROCESS FOR THE AUTOXIDATION OF AN ISOPROPYLPHENYL ESTER

Sheng-Hong A. Dai, Wallingford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 818,233, Jul. 22, 1977, abandoned. This application Feb. 21, 1978, Ser. No. 879,788

Int. Cl.[2] C07C *68/00*

U.S. Cl. 260—463 **13 Claims**

1. In a process for the autoxidation of an isopropylphenyl ester to the hydroperoxyisopropylphenyl ester in the presence of oxygen the improvement which comprises carrying out said autoxidation at a temperature of from about 80° C. to about 130° C. in the presence of a catalyst combination consisting essentially of at least two members of the group consisting of (i) a metal phthalocyanine wherein the metal is selected from the group consisting of copper, zinc, palladium, platinum, silver, and mercury; (ii) a di-tertiary alkyl peroxide; and (iii) a tertiary alkyl hydroperoxide.

4,164,511
MANUFACTURE OF N-ARYLGLYCINONITRILES

Harry Distler, Bobenheim; Helmut Schlecht, and Erwin Hartert, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,696

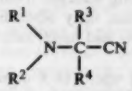
Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621450; May 15, 1976, 2621728

The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.

Int. Cl.[2] C07C *120/00, 121/78*

U.S. Cl. 260—465 E **15 Claims**

1. A process for the manufacture of an N-arylglycinonitrile of the formula



I

wherein

R^1, R^2, R^3 and R^4 each is an aromatic radical selected from the group consisting of phenyl and napthyl, R^3 and R^4 may also each be selected from the group consisting of hydrogen, alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms, cycloalkyl of 5 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms, and R^2 may also be hydrogen, with the proviso that each of R^1, R^2, R^3 and R^4 other than hydrogen may also be further substituted by a group or atom which is inert under the reaction conditions,

which process comprises:

reacting an N-arylamine of the formula

II

where

R^1 and R^2 have the above meaning, with a carbonyl compound of the formula

III

where

R^3 and R^4 have the above meaning, and with hydrogen cyanide in the presence of water for from 0.1 to 4 hours at from 0° to 80° C., the concentration of hydrogen cyanide during the reaction being not more than 0.9% by weight, based on the reaction mixture.

4,164,512
FOAMABLE THERMOELASTIC IONOMER COMPOSITION

Douglas Brenner, Livingston, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 839,172, Oct. 4, 1977. This application Nov. 29, 1977, Ser. No. 855,727

Int. Cl.[2] C08J *9/00*

U.S. Cl. 521—93 **3 Claims**

1. An injection or compression moldable or extrudable elastomeric composition which consists essentially of:

(a) a neutralized sulfonated EPDM terpolymers, said sulfonated EPDM terpolymer having about 10 to about 1000 meq. of neutralized sulfonate groups per 100 grams of said sulfonated EPDM terpolymer, said neutralized sulfonate groups containing metallic cations;

(b) less than about 100 parts by weight of a non polar process oil per 100 parts by weight of said neutralized sulfonated EPDM terpolymer, said oil having less than 2 wt. % polar type compounds:

(c) less than about 200 parts by weight of an inorganic filler per 100 parts by weight of said neutralized sulfonated EPDM terpolymer, said filler being selected from the group consisting of carbon black, silicates, talcs, clays and calcium carbonates and mixtures thereof;

(d) a solid non-volatile preferential ionic plasticizer at about at least 8 parts by weight per 100 parts by weight of said neutralized sulfonated EPDM terpolymer, said preferential plasticizer plasticizing said sulfonate groups, said preferential plasticizer being selected from the group consisting of ureas,, thioureas, fatty acids having about 12 to about 40 carbon atoms and metal salts of said fatty acids thereof; and

(e) a chemical foaming agent at a concentration level of about 0.25 to about 5 parts by weight per 100 parts by weight of said neutralized sulfonated EPDM terpolymer.

4,164,513
AMINO-SUBSTITUTED GUANIDINE SALTS OF DECAHYDRODECABORIC ACID

Terrence P. Goddard, Aptos, Calif., assignor to Teledyne McCormick Selph, an operating div. of Teledyne Ind., Inc., Hollister, Calif.

Filed Nov. 22, 1977, Ser. No. 853,918
Int. Cl.[2] C07C *123/00*
U.S. Cl. 260—564 D **4 Claims**

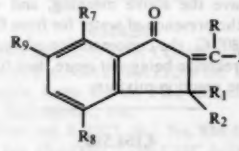
1. The monoaminoguanidinium salt of decahydrodecaboric acid, having the formula $(CNHNH_2(NH_2)_2)_2B_{10}H_{10}$.

4,164,514
2-AMINOMETHYLENEINDANONE ANALGESIC AGENTS

Philip D. Hammen, East Lyme, and George M. Milne, Jr., Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 829,818, Sep. 1, 1977, Pat. No. 4,117,012, which is a division of Ser. No. 763,241, Jan. 27, 1977, Pat. No. 4,064,272, which is a division of Ser. No. 312,693, Dec. 6, 1972, Pat. No. 4,022,836. This application Jul. 17, 1978, Ser. No. 925,631
Int. Cl.[2] C07C *87/28*
U.S. Cl. 260—570.5 P **2 Claims**

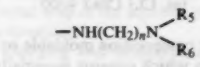
1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein

R is chosen from the group consisting of hydrogen, lower alkyl and phenyl;

Z is



wherein

R_5 and R_6 are each lower alkyl and n is an integer of from 1 to 5;

R_1 and R_2 are each selected from the group consisting of hydrogen and lower alkyl;

R_7 and R_8 are each selected from the group consisting of hydrogen, fluoro and chloro; and

R_9 is selected from the group consisting of hydrogen and fluoro.

4,164,515
PRODUCTION OF CYCLOHEXANONE

Jan F. Van Peppen, and William B. Fisher, both of Chester, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 21, 1977, Ser. No. 853,720
Int. Cl.[2] C07C *27/00, 29/20, 45/00*
U.S. Cl. 260—586 P **12 Claims**

1. A computer controlled process for producing cyclohexanone by liquid phase hydrogenation of phenol in the presence of a sodium-promoted palladium-on-carbon catalyst, including a control system for controlling the ratio of phenol to cyclohexanone in the reaction mixture and limiting the maximum reaction temperature during hydrogenation reaction stages in three or more reactors in series, comprising:

(a) generating and storing in the computer sampled data inputs from each reactor of analog representations of reactor hydrogen pressure, temperature, phenol concentration, cyclohexanone concentration, catalyst concentration, hydrogen feed rate, phenol feed rate and cyclohexanone flash rate;

(b) processing said sampled inputs in the computer by relating them to a stored anticipatory control program to provide output data for controlling the ratio of phenol to cyclohexanone and limiting the maximum reaction temperature during the hydrogenation reaction stages; and

(c) controlling the ratio of phenol to cyclohexanone and limiting the maximum reaction temperature during said hydrogenation reaction stages in response to said output data from the computer, the process being further characterized in that the reaction temperature is maintained at or below the atmospheric boiling point of the reaction mixture in each reactor.

4,164,516
PREPARATION OF 4-HYDROXY-2,4,6-TRIMETHYL-CYCLOHEXA-2,5-DIENE-1-ONE

Michel Costantini, Lyons, and Michel Jouffret, Francheville Le Bas, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 17, 1977, Ser. No. 843,075
Claims priority, application France, Oct. 25, 1976, 76 33025
Int. Cl.[2] C07C *45/16*
U.S. Cl. 260—586 P **23 Claims**

1. A process for the preparation of 4-hydroxy-2,4,6-trimethyl-cyclohexa-2,5-dien-1-one, which comprises oxidizing 2,4,6-trimethyl-phenol with molecular oxygen or an oxygen containing gas, said oxidation being conducted under a partial pressure of oxygen of about 1 bar or less and in the simultaneous presence of a catalytic amount of (i) a cobalt/Schiff base complex, and (ii) a co-catalyst selected from the group consisting of an amine, a phosphine, an organic phosphite, and mixtures thereof.

4,164,517
PREPARATION OF FLUORONITROBENZENE

George Fuller, Portishead, England, assignor to I.S.C. Chemicals Limited, London, United Kingdom

Filed Dec. 30, 1977, Ser. No. 866,007
Int. Cl.[2] C07C 79/12
U.S. Cl. 260—646 7 Claims

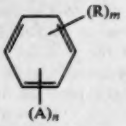
1. A method of preparing a fluoronitrobenzene containing a fluorine atom in the para position with respect to the nitro group, comprising heating a dichloronitrobenzene selected from the group consisting of (a) a dichloronitrobenzene containing chlorine atoms in the ortho and para positions with respect to the nitro group and (b) a dichloronitrobenzene containing chlorine atoms in the meta and para positions with respect to the nitro group, with potassium fluoride in the presence of a sulpholane at a temperature of about from 180° C. to 250° C., and wherein the mole ratio of sulpholane to said dichloronitrobenzene is from 0.1:1 to 3.0:1.

4,164,518
PROCESS FOR PRODUCING DIPHENYLS

Yataro Ichikawa, and Teizo Yamaji, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 326,454, Jan. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 60,945, Aug. 4, 1970, abandoned. This application Oct. 14, 1977, Ser. No. 842,312
Claims priority, application Japan, Apr. 4, 1969, 44/26046
Int. Cl.[2] C07C 15/14, 25/18, 43/20
U.S. Cl. 585—427 6 Claims

1. A process for producing diphenyls which comprises contacting benzene or a benzene derivative expressed by the following formula



wherein

R's may be same or different and represent alkyl having 1 to 4 carbon atoms;

m is a positive integer of 0 to 4;

A's may be the same or different and represent alkoxy having 1 to 4 carbon atoms or a halogen atom;

n is a positive integer of 0 to 2; and

the sum of m and n does not exceed 4 and when m is 0 or n is 0, $-(R)_m$ or $-(A)_n$ respectively represents a hydrogen atom,

with molecular oxygen, in the absence of a solvent and in the presence of a β-diketo complex of palladium as a catalyst in an amount of 0.001 to 0.1 gram-atom calculated as metallic palladium, for each gram-mole of benzene or its derivative, thereby to dimerize the benzene or benzene derivative oxidatively wherein the oxidation coupling is carried out at a pressure of at least 2.5 atmospheres calculated as the partial pressure of oxygen at a temperature of 100° to 300° C.

4,164,519
OXIDATIVE DEHYDROGENATION PROCESSES

Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 451,476, Mar. 15, 1974, Pat. No. 3,933,933, which is a division of Ser. No. 245,382, Apr. 19, 1972, Pat. No. 3,821,324. This application Sep. 25, 1975, Ser. No. 616,719
Int. Cl.[2] C07C 11/12
U.S. Cl. 585—622 4 Claims

1. A process for the oxidative dehydrogenation of a dehydrogenatable hydrocarbon having from 4 to 12 carbon atoms which comprises contacting said feedstock under dehydrogenation conditions in the presence of molecular oxygen with a catalyst consisting essentially of titanium, molybdenum, phosphorus and combined oxygen, said catalyst being characterized by the expression

$$TiMo_xP_yO_z$$

wherein x and y are numbers in the approximate range of 0.01 to 5 and z is a number determined by the valence requirements of said titanium, molybdenum and phosphorus.

4,164,520
ACCELERATED CURE OF EPOXY RESINS

Harold G. Waddill, Austin, and Howard P. Klein, Houston, both of Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 865,053, Dec. 27, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,260
Int. Cl.[2] C08L 63/00
U.S. Cl. 525—484 8 Claims

1. A process for curing epoxy resins comprising:

mixing an epoxy resin with about a stoichiometric amount of a condensation product of phenol, formaldehyde and an aminoalkylene derivative of a polyoxyalkylenepolyamine made by reacting a polyoxyalkylene polyamine with acrylonitrile followed by hydrogenation.

4,164,521
MIXTURES OF POLYCATIONIC AND POLYANIONIC POLYMERS FOR SCALE CONTROL

Richard M. Goodman, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 7, 1977, Ser. No. 766,329
Int. Cl.[2] C08L 33/02
U.S. Cl. 525—187 7 Claims

1. A magnesium scale inhibiting composition comprising (1) a polyanionic polymer containing at least about 50 mole percent of repeating units derived from an acrylic acid and any balance of repeating units derived from one or more monomers compatible therewith, the acid units being in the form of at least one member selected from the group consisting of free acid radical, ammonium salts, and alkali metal salts, and (2) a polycationic polymer constituting the reaction product of dimethylamine-polyamine-epichlorohydrin wherein the amount of said polyamine is from 0 to about 15 mole percent of the total amine content and the amount of said epichlorohydrin is from at least the molar equivalent of the total amine content up to the full functional equivalent of said amine content, said polyanionic polymer having a molecular weight in the range of about 500 and 50,000, said polycationic polymer having a molecular weight in the range of about 1,500 to about 500,000, and the molar ratio of said polycationic polymer to said polyanionic polymer based on the average molecular weight of the repeating units therein being in the range of about 2:1 to 25:1.

4,164,522
VINYLIDENE CHLORIDE POLYMER MICROGEL POWDERS AND ACRYLIC FIBERS CONTAINING SAME

Dale S. Gibbs, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 15, 1978, Ser. No. 942,257
Int. Cl.[2] C08L 33/20
U.S. Cl. 525—305 13 Claims

1. A crosslinked vinylidene chloride polymer microgel powder which can be incorporated in acrylic fibers as a flame-retardant additive, said powders being recovered from a latex obtained by emulsion polymerizing in sequence

(a) a first monomer mixture comprising about 85 to about 95 parts by weight of vinylidene chloride, about 5 to about 15 parts by weight of a copolymerizable ethylenically unsaturated comonomer and a minor amount of a copolymerizable crosslinking polyfunctional comonomer, wherein the polymer resulting from the polymerization of the first

monomer mixture has a gel content in the range of about 1 to about 50 percent;

(b) a minor amount of a polyfunctional comonomer for providing graft sites on the product of (a); and

(c) about 10 to about 25 weight percent, based on the weight of the first monomer mixture, of a second monomer mixture comprising about 85 to about 95 weight percent acrylonitrile and about 5 to about 15 weight percent of an ethylenically unsaturated comonomer copolymerizable with acrylonitrile;

wherein the microgels in the resulting latex have a diameter less than about 1 micron.

4,164,523

METHOD OF INJECTION-MOLDING AND COOLING OF SHAPED SYNTHETIC-RESIN BODIES

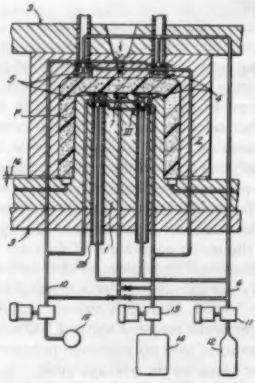
Robert Hanning, Via Marco 47, Campione d'Italia (TI), Switzerland (CH-6911)

Division of Ser. No. 801,013, May 26, 1977. This application Apr. 5, 1978, Ser. No. 893,775

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640607

Int. Cl.[2] B29C *25/00*

U.S. Cl. 264—28 **7 Claims**



1. A process for making a shaped body of synthetic-resin material in a mold cavity formed by separable mold parts, said method comprising the steps of:

injecting a mass of said synthetic-resin material into said mold cavity in a plastically deformable heated state to fill said mold cavity;

immediately upon filling said mold cavity, introducing a liquefied-gas coolant between the synthetic resin in the mold cavity and the walls of said mold cavity;

conducting said coolant along surfaces of the synthetic resin in said mold cavity to substantially uniformly distribute said coolant along said surfaces with a controllable contact time therewith;

discharging coolant upon the flowing thereof in contact with said surfaces from at least one opening formed in the mold; and

opening said mold to eject a molded body formed from said synthetic resin from said mold cavity upon the contact of said coolant therewith.

4,164,524

TREATMENT OF BLOOD CONTAINING VESSELS

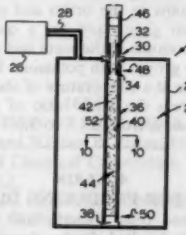
Charles A. Ward, 25 Borden St., Toronto, Canada (M5S 2M8), and Walter Zingg, 92 Highbourne Rd., Toronto, Canada (M5P 2J6)

Continuation of Ser. No. 581,336, May 27, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,610

Claims priority, application Canada, May 31, 1974, 201409

Int. Cl.[2] B29C *25/00*

U.S. Cl. 264—39 **5 Claims**



1. A method of treating at least a portion of a first surface of a gas permeable wall of the type used in gas permeable medical tubing, vessels and the like, the surface having small irregularities containing gas nuclei and the method comprising the steps:

bringing a solution which is compatible with blood into contact with said first surface at least to the extent that the solution is in contact with all of said portion of the first surface; and

applying a partial vacuum to a second side of the wall to thereby create a pressure gradient from said first side to said second side of the wall for a predetermined time period to enhance permeation of the gas nuclei trapped in said irregularities so that these gas nuclei pass through the wall and so that priming solution is drawn at least partly into said irregularities whereby a new first surface is created consisting partly of said portion of said first surface and partly of solution trapped in said irregularities, the new first surface being substantially free of gas nuclei so that when the main body of priming solution is displaced by blood the number of blood to gas nuclei interfaces is limited to thereby significantly diminish the possibility of platelet adhesion.

4,164,525

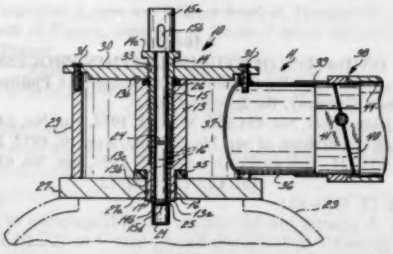
DEVICE FOR SUPPLYING FUEL TO AN INTERNAL COMBUSTION ENGINE

Gunther Bernecker, Montvale, N.J., assignor to G.M.C. Research, Inc., Orange, N.J.

Filed Oct. 13, 1977, Ser. No. 841,872

Int. Cl.[2] F02M *11/00*

U.S. Cl. 261—41 B **6 Claims**



1. A carburetor for supplying a fuel/air mixture to an inter-

nal combustion engine including a fuel ejecting device comprising a shell, a tube received in the shell and a rod received in the tube with a sliding fit, a plurality of orifices in the tube at intervals along at least a portion of the length of the tube, the rod being insertable in the tube to an extent sufficient to block the orifices and retractable to an extent sufficient to leave the orifices unobstructed, the number of orifices left unobstructed increasing in proportion to the extent to which the rod is retracted, the rod including means for connection to a linkage from a motor vehicle throttle for effecting axial movement of the rod, an annular space defined between the exterior wall of the portion of the length of the tube having orifices and the portion of the length of the interior wall of the shell facing said orifices, and means defining passages for admitting liquid fuel into the annular space, whereby the fuel is ejected from the device solely through the annular space when the rod is inserted in the tube to an extent sufficient to block the orifices and some of the fuel also passes from the annular space through the orifices to the interior of the tube from whence the fuel is ejected from the device when the rod is retracted to an extent sufficient to leave orifices unobstructed, the volumetric flow rate of the fuel into and through the tube increasing as the number of orifices left unobstructed is increased by increasing the retraction of the rod, and air admitting means for admitting air into admixture with the ejected fuel.

4,164,526

NATURAL SANDWICH OF FILLED POLYURETHANE FOAM

Edward L. Clay, 9113 Park, Lenexa, Kans. 66215, and Jerry L. Baker, Kansas City, Mo., assignors to T. R. Baker; F. Walter McCarty, Jr.; Norman E. Jacobs; Edward N. Ludwikoski; C. Alex McBurney; Lawrence F. Steffen; The Cooper Corporation; H & K Sales Company, Inc.; Phoenix Royalty Associates, Inc. and Edward L. Clay

Continuation of Ser. No. 599,653, Jul. 28, 1975, abandoned, which is a continuation of Ser. No. 346,912, Apr. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 247,029, Apr. 24, 1972, abandoned. This application Oct. 20, 1977, Ser. No. 844,131

Int. Cl.[2] **B29D** *27/04;* **C08G** *18/14, 18/00, 18/08*

U.S. Cl. 264—45.3 **4 Claims**

1. A process of preparing a molded, integral-skin, filled foam product comprising the steps of:

providing a mold presenting an enclosed molding cavity;

charging said cavity with a foamable molding composition which comprises

a polyurethane composition designed to yield rigid and products and which comprises an isocyanate, a polyol, and a blowing agent;

an inorgantic, particulate filler material which is substantially chemically unreactive with said isocyanate and polyol, the major proportion by weight of said filler material having a diameter of at least about 10 microns; and

a density distribution control agent which is liquid at room temperature, substantially chemically unreactive with said isocyanate and polyol and soluble in said foamable composition, does not significantly accelerate or decelerate the reaction between the components of said foamable composition, and serves to reduce the viscosity of said foamable composition with said filler material therein,

said density distribution control agent being selected from the group consisting of carbon tetrachloride, trichloroethylene, chloroform, methylchloroform, perchloroethylene and ethyl acetate,

said foamable composition including from about 20 to 75 parts by weight of said polyurethane composition, from about 25 to 80 parts by weight of said filler, and from about 3 to 12 parts by weight of said density distribution control agent,

the ratio by weight of filler material to polyurethane molding composition being in the range of approximately 1:3 to 4:1;

causing said foamable composition to react within said mold to create a hardened product,

said filler and density distribution control agent serving, during said reaction, to cooperatively reduce the temperature of reaction to a level for preventing an excessive increase in the pressure within said mold over that provided by the blowing agent,

the reduced viscosity of said foamable composition derived from the use of said density distribution control agent therein serving, during said reaction, to reduce the thickness of cell walls formed just prior to gelation, in order to cause a greater expansion in the central area of the mold cavity and a corresonding concentration of material in the regions of said cavity adjacent the mold walls,

said reaction being carried out such that said product has

a rigid, closed cellular core, a rigid, closed cellular outer portion, at least a pair of opposed outer layers, and a very thin, rigid, essentially void-free outer surface,

said core having a first density, a first average cell size, and respective first concentrations of polyurethane material and filler material,

said outer portion having a second density which is at least about three to ten times as great as said first density, a second average cell size less than said first average cell size, and respective second concentrations of polyurethane material and filler material which are substantially greater than the corresponding first concentrations,

the percent by weight of said filler material in said product being substantially the same in both said core and outer portion,

the ratio of the thickness of said core to the combined thicknesses of said opposed layers being in the range of approximately 10:1 to 1:2,

said outer surface having a durometer hardness value of at least approximately 50 throughout its area.

4,164,527

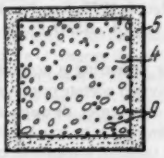
METHOD OF MAKING SUPERHARD ARTICLES

Valentin N. Bakul, ulitsa Kirova, 34a, kv. 12; Ivan F. Vovchanovsky, Bulvar Lesi Ukrainki, 5, kv. 119, and Nekhemian V. Tsypin, ulitsa Dorogozhitskaya, 26, kv. 59, all of Kiev, U.S.S.R.

Continuation of Ser. No. 612,921, Sep. 12, 1975, abandoned, which is a continuation of Ser. No. 520,212, Nov. 1, 1974, abandoned. This application Aug. 16, 1976, Ser. No. 714,684

Int. Cl.[2] **C04B** *35/52*

U.S. Cl. 264—60 **4 Claims**



1. A method of making a superhard article comprising the steps of: preparing a briquette from a homogeneous mixture of a powdered hard-alloy matrix material and diamond grains uniformly distributed throughout the matrix material; providing the briquette with an external envelope formed from the

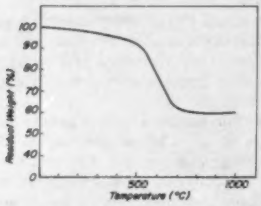
same powdered hard-alloy matrix material of the briquette and having a thickness over the entire area thereof exceeding by at least 3–4 times the maximum space between any two adjacent diamond grains within the briquette; and sintering the briquette in the envelope in a free condition without any external mechanical loads being applied to the briquette, whereby the envelope having a higher contraction coefficient than the briquette compresses the briquette.

4,164,528

METHOD FOR PRODUCING METAL NITRIDE SINTERED MOLDINGS

Seishi Yajima; Josaburo Hayashi; Mamoru Omori; Hideo Kayano, and Masaaki Hamano, all of Oharai, Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Sendai, Japan

Filed Oct. 8, 1976, Ser. No. 730,881
Claims priority, application Japan, Oct. 18, 1975, 50/124878
Int. Cl.[2] C04B *35/56*
U.S. Cl. 264—62 **7 Claims**



1. A method for producing metal nitride sintered moldings, which comprises mixing metal nitride powders with 0.3–45 percent by weight of a binder consisting essentially of organosilicon high molecular weight compounds having silicon and carbon as the main skeleton components, which have been produced through polycondensation reaction of polydimethylsilanes, molding the resulting mixture into a desired shape and heating the molding at a temperature of 800°–2200° C. under at least one atmosphere selected from the group consisting of vacuum, inert gas, CO gas and hydrogen gas to form metal nitride sintered molding.

4,164,529

PROCESS FOR PREPARING TUBULAR FILM OF HYDROLYZED ETHYLENE-VINYL ACETATE COPOLYMER

Yukio Fujita, Otsu; Teruo Iwanami, Takatsuki, and Yoshimi Akamatsu, Amagasaki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 4, 1977, Ser. No. 839,260
Int. Cl.[2] B29D *23/04*
U.S. Cl. 264—565 **4 Claims**

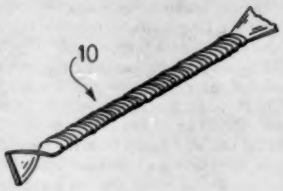
1. In a process for preparing a continuous tubular film of hydrolyzed ethylene-vinyl acetate copolymers by melt-extruding the hydrolyzed copolymer through a circular die in the form of tube, expanding the tube to a bubble by the pressure of internal air admitted through a mandrel, collapsing the bubble and winding up the film through nip rolls, the improvement which comprises employing hydrolyzed ethylene-vinyl acetate copolymers having an ethylene content of 15 to 50% by mole and a degree of hydrolysis in the vinyl acetate units of not less than 90% by mole and maintaining the surface temperature of the film at the nip rolls within the range of 50° to 100° C.

4,164,530

METHOD OF MAKING MONOFILAMENT FROM THERMOPLASTIC RESIN TAPES

Armen Renjilian, Albany; Donald S. Nichols, and Richard J. Hartigan, Jr., both of Delmar, all of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,141
Int. Cl.[2] B29C *17/02*
U.S. Cl. 264—103 **5 Claims**



1. A method of preparing a monofilament of a thermoplastic polymeric resin, which comprises;

providing the thermoplastic polymeric resin in the form of a tape, the molecular structure of the tape being directionally unoriented;

twisting the tape to form a generally cylindrical cross-section;

heating the twisted tape at or above its glass transition temperature;

drawing the twisted tape whereby the pressure of drawing orients the molecular structure of the tape along its lengthwise axis and whereby the twisted tape is fused to form a monofilament with a round cross-section;

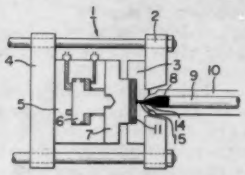
cooling the fused tape to a temperature below its glass transition temperature.

4,164,531

INJECTION MOLDING OF ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

Takeshi Shiraki, Yamaguchi; Shozo Hieda, Otake, and Tomokazu Ninomiya, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 645,437, Dec. 30, 1975, abandoned. This application Dec. 8, 1977, Ser. No. 858,834
Claims priority, application Japan, Jan. 13, 1975, 50-5611
Int. Cl.[2] B29C *5/02*; B29F *1/00, 5/00*
U.S. Cl. 264—115 **6 Claims**

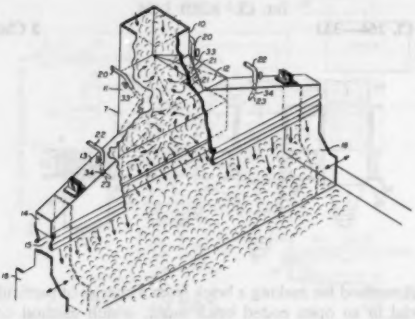


1. A process for injection molding of ultra high molecular weight polyethylene having an intrinsic viscosity of 10 to 30 when measured in decalin at 135° C. and a melt index of up to 0.01 which comprises injecting the polyethylene into a mold cavity having a volume of 1.7 to 2.5 times that of the injected polyethylene at a shear rate of from 200,000 to 500,000 sec^{-1} measured at the gate of the injection nozzle at a temperature of from 150° C. to 300° C. to form powder particles and reducing the mold cavity volume to less than 1.5 times that of the injected polyethylene to compress and unite the powder particles and form a coherent molded product.

4,164,532
PROCESS AND APPARATUS FOR UNIFORMLY DISTRIBUTING GLASS FIBERS

Matthew R. Piazza, Nichols, Conn., assignor to Maso-Therm Corporation, Bridgeport, Conn.

Division of Ser. No. 810,451, Jun. 27, 1977, Pat. No. 4,123,212.
This application Jun. 19, 1978, Ser. No. 918,171
Int. Cl.[2] D04H 3/16
U.S. Cl. 264—115 5 Claims

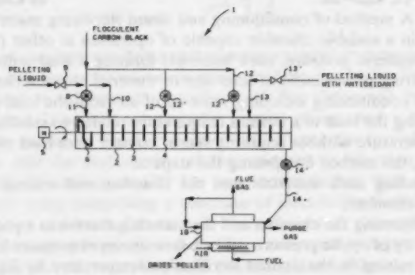


1. A process for substantially uniformly distributing glass fibers onto a forming bed, the process comprising the steps of: chopping glass fibers into desired lengths; providing a first zone downstream of the chopping and dropping the chopped fibers therein; providing a second zone in communication with the first zone and downstream thereof and dispersing the glass fibers received from the first zone therein to effect a random uniform matrix thereof along the width of the bed by creating a turbulence therein; substantially isolating the fibers in the random uniform matrix from the turbulence in the second zone by providing a third zone having an adjustable length elongated outlet aperture extending across a desired width of the bed and disposed downstream of the second zone and receptive of the dispersed glass fibers in the random uniform matrix; and substantially uniformly distributing the glass fibers in the third zone on the desired width of the bed by dropping same through the aperture and moving the third zone relative to the bed along the length thereof.

4,164,533
CARBON BLACK PELLET AND METHOD AND APPARATUS FOR PRODUCING SAME

Harold R. Hunt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 21, 1977, Ser. No. 853,715
Int. Cl.[2] B01J 2/12
U.S. Cl. 264—117 12 Claims

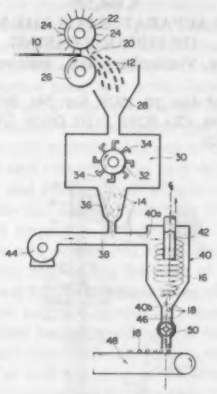


1. A method for producing carbon black pellets comprising:
(a) wetting flocculent carbon black with a pelleting liquid in a pelleting means;
(b) agitating the thus wetted flocculent carbon black in the pelleting means to form pellets;
(c) adding antioxidant during the agitating of step (b) after the pellets have been at least substantially formed so that the antioxidant is contained substantially only in an outer portion of the pellet surrounding a core portion; and
(d) drying the thus produced pellets containing said antioxidant.

4,164,534
METHOD OF PRODUCING LUMPS OF TANGLED FIBERS

Kiyoshi Ogino, Matsusaka, Japan, assignor to Central Glass Company, Limited, Ube, Japan

Filed Mar. 13, 1978, Ser. No. 886,111
Claims priority, application Japan, Mar. 14, 1977, 52/27073
Int. Cl.[2] B01J 2/16
U.S. Cl. 264—117 11 Claims



1. A method of producing lumps of tangled fibers, comprising the steps of:
continuously whirling a gas around in a vessel; and
introducing short fibers which are substantially in an untwisted state into said vessel so as to be involved and dispersed in the whirling gas, whereby said short fibers, absent an added binder, are subjected to sufficient individual tangling with each other to form individual fiber lumps which fall towards the bottom of said vessel.

4,164,535
ANTISTATIC TEXTILE MATERIALS

Georges Veaute, Ozouers en Touraine, France, assignor to Manufacture de Produits Chimiques Protex S.A., Paris, France

Filed Oct. 18, 1977, Ser. No. 843,217
Claims priority, application France, Oct. 19, 1976, 76 32033
Int. Cl.[2] B29G 5/00; C08L 7/02, 61/20
U.S. Cl. 264—136 7 Claims

1. In a method of making a textile material wherein textile fibers are bonded by a a thermally activatable binder, the improvement which comprises rendering the textile material antistatic by adding to the binder an alkylene-urethane thermosensitive copolymer of the formula:

$$(O{=}C{=}N)_x{-}R{-}[{-}NH{-}CO{-}O{-}(-C_nH_{-2n}{-}O{-})_p{-}R']_y$$

wherein
R is an aliphatic or aromatic moiety which contains a biuret, urethane or isocyanate group;

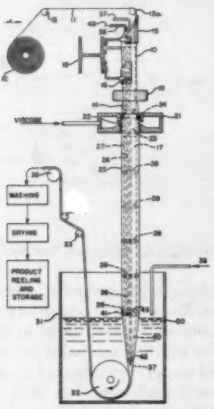
R' is hydrogen, C_1 to c_8 straight or branched chain alkyl, aryl or alklyaryl;
x is between 0 and 1 inclusive;
y is greater than 2;
n has a value of 1 to 4 inclusive; and
p is greater than 5; and
controlling the pH of the binder upon thermal activation thereof so as to be at most 5.5.

4,164,536

METHOD AND APPARATUS FOR THE MANUFACTURE OF FIBROUS CASING

James G. Bentley, Veedersburg, Ind., assignor to Teepak, Inc., Chicago, Ill.

Filed Apr. 18, 1978, Ser. No. 897,327
Int. Cl.[2] B29F *3/10*; D01F *1/08*
U.S. Cl. 264—173 **9 Claims**



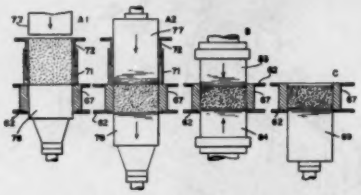
1. A process for the manufacture of fibrous casing from a fibrous tube having interior and exterior surfaces, which process comprises
sleeving the tube over a mandrel and providing a space therebetween;
advancing the tube over a mandrel;
impregnating the tube with viscose while the tube is advanced over the mandrel;
regenerating cellulose from the viscose impregnated tube by applying a coagulating liquid to the interior and exterior surfaces of the tube;
withdrawing the liquid from within the tube by imposing a pressure differential on the liquid;
introducing a gas at a point above the liquid level as the liquid is being withdrawn from within the tube to cause the gas to be entrained in the liquid to form a fluid mixture having a specific gravity less than that of the liquid so as to prevent air from being withdrawn from the space in order that the tube remain in spaced relation to the mandrel; and then
collecting the fibrous casing.

4,164,537

BRICK PRESS AND ASSOCIATED EQUIPMENT FOR MAKING BRICKS

Frede H. Drostholm, 2950 Vedbaek; Harry Jensen, Begoniavej 9a, 2820 Gentofte, and Per Willadsen, Mollebakkevej 10, 3370 Melby, all of Denmark

Division of Ser. No. 721,867, Sep. 9, 1976, Pat. No. 4,050,865, which is a continuation-in-part of Ser. No. 510,145, Sep. 30, 1974, Pat. No. 4,035,128. This application Mar. 7, 1977, Ser. No. 775,182
Int. Cl.[2] B28B *3/08*
U.S. Cl. 264—333 **3 Claims**



1. A method for making a brick from a charge of particulate material in an open ended brick mold, which method comprises measuring a charge of the particulate material externally of the mold, introducing the measured charge into the mold, effecting compression of the charge in two stages, the first stage being accomplished by applying pressure to the charge through both ends of the mold and concurrently shifting the position of the entire charge in the mold in a direction from one end of the mold toward the other end thereof, and the second stage being accomplished by applying pressure to the charge through both ends of the mold while maintaining a given mean position of the charge in the mold.

2. A method for compressing a charge of particulate material in an open ended brick mold, which method comprises effecting said compression in two stages, the first stage being accomplished by applying pressure to the charge through both ends of the mold and concurrently shifting the position of the entire charge in the mold in a direction from one end of the mold toward the other end thereof, and the second stage being accomplished by applying pressure to the charge through both ends of the mold while maintaining a given mean position of the charge in the mold.

4,164,538

LOAD CONDITIONING CONTROL METHOD FOR STEAM STERILIZATION

Jack H. Young, Cambridge Springs, and Frank E. Halleck, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

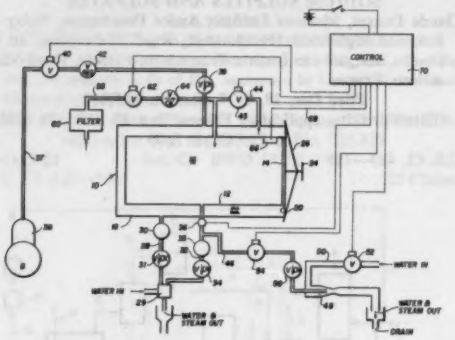
Filed Nov. 11, 1977, Ser. No. 850,845
Int. Cl.[2] A61L *5/00, 1/00, 3/00*
U.S. Cl. 422—26 **18 Claims**

1. A method of conditioning and steam sterilizing materials within a sealable chamber capable of operation at other than atmospheric pressure, such materials forming a load without requiring preselection of load size or material characteristics, such conditioning including removal of air from the load and heating the load to a desired temperature related to sterilizing temperature without requiring sensor contact with load materials, the method comprising the steps of
loading such materials into the chamber and sealing the chamber,
subjecting the chamber and the materials therein to a plurality of cyclic pressure pulses below an upper pressure level related to the desired sterilization temperature by injecting a condensable vapor having transferable latent heat into the chamber and evacuating the chamber, each cyclic pressure pulse including an evacuating phase during

which pressure in the chamber is decreasing and a vapor injecting phase during which the pressure is increasing,

measuring the change of chamber pressure in relation to time lapse during at least a portion of the evacuating phase and employing the measured change as an indication of chamber evacuation rate during the evacuating phase,

employing the indicated chamber evacuation rate of the evacuation phase to automatically control the termination



of that evacuation phase and initiate the succeeding cyclic pressure pulse pressurization phase to complete load conditioning by removing air from the load and heating the load to the desired temperature, and then

introducing and maintaining sterilizing steam in the chamber at a pressure level to maintain the desired temperature for a time sufficient to affect desired sterilization of the material in the chamber.

4,164,539

CATALYTIC GAS DETECTOR

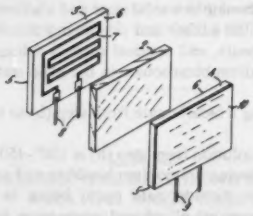
James S. Johnston, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Great Britain

Filed Aug. 29, 1977, Ser. No. 828,662

Claims priority, application United Kingdom, Aug. 31, 1976, 36068/76

Int. Cl.² G01N *27/16*

U.S. Cl. 422—96 **9 Claims**



1. A catalytic gas detector formed as a sandwich comprising two resistance thermometer sensor bodies, the bodies being formed as substantially equally sized flat plates and being disposed in spaced substantially parallel planes, and a thermally insulating member sandwiched between the two plates such that the surface area of the sandwich is less than the combined surface area of the two sensor bodies, each said sensor body comprising a substrate of electrically insulating material and having thereon in thermal contact therewith a conducting path of material having a temperature dependent co-efficient of resistance, said thermally insulating member having a lower thermal conductivity than the material of said substrates and one of said sensor bodies having a catalytic coating on an exposed surface portion thereof.

4,164,540

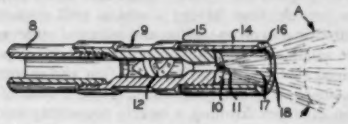
CARBON BLACK REACTOR

John E. Slagel, and Jack W. Brock, both of Orange, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 29, 1977, Ser. No. 782,607

Int. Cl.² C09C *1/48*; F23D *15/04*

U.S. Cl. 422—158 **6 Claims**



1. A carbon black reactor having an improved make oil dispensing nozzle wherein said carbon black reactor includes:

(a) a housing defining a precombustion zone and reaction zone therein, said reaction zone being in downstream flow communication with the precombustion zone;

(b) inlet means communicating with said precombustion zone operable for introducing combustion gases thereinto;

(c) a conduit extending into said precombustion zone;

(d) a nozzle mounted on said conduit for receiving make oil therefrom and positioned in one of said reaction zone and said precombustion zone, said nozzle having a discharge orifice opening on a free end thereof operable for discharge of a generally cone-shaped stream of make oil; and

(e) a tubular member positioned in one of said precombustion zone and said reaction zone, said nozzle being positioned within said tubular member, said tubular member having an open end directed generally in a downstream direction with respect to the direction of discharge of make oil from said nozzle and extending in said downstream direction beyond the free end of the nozzle, the other end of said tubular member being closed about one of said conduit and said nozzle to prevent the flow of combustion gases between said tubular member and said nozzle from said other end, said tubular member having a size such that at least a portion of the coneshaped stream of make oil will contact an interior surface of said tubular member.

4,164,541

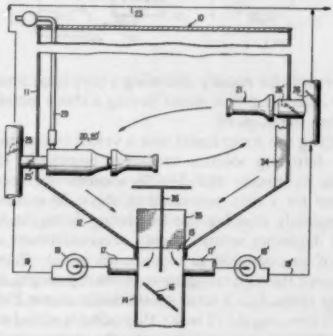
VENTURI MIXER

Edward A. Platz, deceased, late of Belle Mead, N.J.; by Zelma H. Platz, executor, Opossum Rd., R.R. #2, and by William Lubas, executor, Kildee Rd., R.R. #2, both of Belle Mead, N.J. 08502

Filed Nov. 22, 1976, Ser. No. 743,949

Int. Cl.² C05B *7/00*; B01F *5/00*; B01J *1/00*

U.S. Cl. 422—198 **14 Claims**



1. An apparatus for reacting an acid reactant and base reac-

tant and mixing the reaction product with said reactants, whereby the acid and base reactants are reacted and partially neutralized to salts, wherein lumping of the salts is avoided, said apparatus comprising:

a mixing tank; and

a venturi pump mounted in said mixing tank and comprising:

a venturi tube having inlet and outlet ends;

a reactor upstream of said venturi tube and comprising:

a reaction chamber having a central wall portion which is cylindrical in cross-section and inlet and outlet ends which are smaller in diameter than the cylindrical portion and joined thereto, respectively, by first and second concave frusto-conical wall sections, said outlet ends of said reaction chamber forming a nozzle projecting into the inlet end of the venturi tube and a plurality of holes in said first concave frusto-conical wall section; and

an induction chamber upstream from and adjacent said reaction chamber and overlying at least a portion of the first concave frusto-conical wall section and registering with the holes in the first concave frusto-conical wall section;

first inlet means for introducing one of said reactants into said induction chamber, whereby said reactant may pass through the holes in said first concave frusto-conical wall section into said reaction chamber; and

second inlet means for introducing the other reactant and the contents from the mixing tank directly into said reaction chamber through the inlet end of said reaction chamber without being introduced into said induction chamber;

whereby the reaction between the acid and base reactants may take place in said reaction chamber to release energy which powers said venturi tube by expanding through said outlet end of said reaction chamber into said inlet end of said venturi tube.

4,164,542

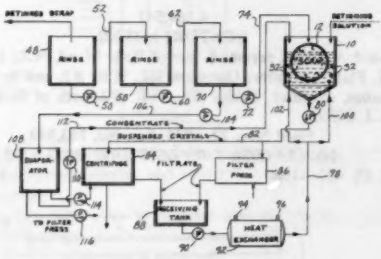
DETINNING PROCESS

Pincus Deren, 712 E. Hampton Rd., Milwaukee, Wis. 53217

Continuation of Ser. No. 458,085, Apr. 5, 1974, abandoned, which is a continuation of Ser. No. 251,408, May 8, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,611

Int. Cl.[2] C01G *19/00*

U.S. Cl. 423—90 **2 Claims**



1. A process for rapidly detinning a tin-plated scrap metal to produce a detinned base metal having a shiny metallic surface comprising the steps of

immersing the scrap metal into a vessel containing an aqueous detinning solution including essentially 18–30% sodium hydroxide and 2–10% sodium nitrate or sodium nitrite for a time period up to about 20 minutes so as to completely dissolve the tin-plating from the base metal, said detinning solution being preconditioned at the start up of an operation to increase its initial effectiveness to dissolve the tin-plating by temporarily raising the temperature thereof to a level substantially above 236° F. and a sufficient amount of water thereafter is added to the aqueous detinning solution to lower the temperature thereof to between 226 and 236° F. so as to exceed the saturation point of the sodium stannate formed therein and cause precipitation of said sodium stannate; and

continuously removing said precipitated sodium stannate from said detinning solution while the scrap metal is immersed therein.

4,164,543

PROCESS FOR REGENERATING BRINES CONTAINING SODIUM SULFITES AND SULFATES

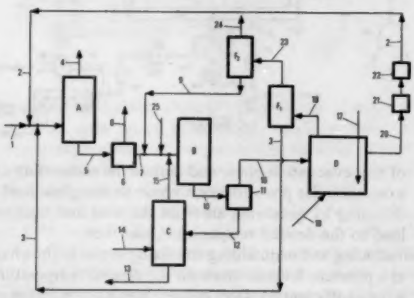
Claude Dezael, Maisons Laffitte; André Deschamps, Noisy le Roi, and Sigismond Franckowiak, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 28, 1977, Ser. No. 865,287

Claims priority, application France, Dec. 28, 1976, 76 39519

Int. Cl.[2] C01D *7/00*

U.S. Cl. 423—189 **12 Claims**



1. A process for treating brine containing simultaneously sodium sulfate and at least one of sodium sulfite and sodium bisulfite so as to obtain sulfur dioxide, said process comprising the steps of

(a) contacting the brine with ammonium bisulfate, sodium bisulfate and at least one of ammonium sulfite and ammonium bisulfite to produce gaseous sulfur dioxide and an enriched solution of sodium sulfate and ammonium sulfate, and separating said gaseous sulfur dioxide from said enriched solution,

(b) reacting the solution from step (a) with carbon dioxide from step (h) and ammonia from step (f) so as to obtain sodium bicarbonate in a solid state and a solution enriched with ammonium sulfate and containing dissolved ammonium bicarbonate, and residual sodium sulfate, and separating the sodium bicarbonate in the solid state from said solution,

(c) decomposing a bicarbonate from step (b) to form carbon dioxide,

(d) heating the solution from step (b) at 150°–450° C. with an agent for reducing ammonium bisulfate and sodium bisulfate to sulfur dioxide, said agent being in insufficient amounts to convert all of said ammonium bisulfate and sodium bisulfate to sulfur dioxide, and recovering a mixture of unconverted ammonium bisulfate and sodium bisulfate, and a gas comprising sulfur dioxide, ammonia and water,

(e) separating the gas recovered from step (d) and subjecting said gas to stepwise cooling to recover a first condensate comprising an aqueous ammonium sulfite solution and then a second condensate comprising an aqueous ammonia solution,

(f) feeding the first condensate to step (a) to supply an ammonium sulfite, and the second condensate to step (b) to supply ammonia,

(g) feeding step (a) with ammonium bisulfate and sodium bisulfate recovered from step (d),

(h) feeding step (b) with carbon dioxide recovered from step (c), and

(i) discharging gaseous sulfur dioxide from step (a).

4,164,544

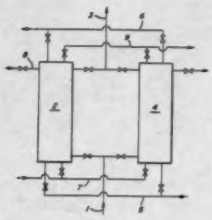
DESULFURIZATION OF HOT REDUCING GAS

Robert G. Olsson, Edgewood Borough, and Ethem T. Turkdogan, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 718,257, Aug. 27, 1976. This application Sep. 30, 1976, Ser. No. 728,329

Int. Cl.² B01D *53/34*

U.S. Cl. 423—230 **22 Claims**



1. In a process for desulfurizing hot reducing gas by contacting said gas with a desulfurizing agent, then regenerating the spent desulfurizing agent, and then reusing the regenerated desulfurizing agent for desulfurizing hot reducing gas, the improvement wherein the desulfurizing agent comprises a bed of sintered, porous pellets comprising manganese oxide and non-reactive metal oxide comprising finely divided aluminum oxide, wherein the spent desulfurizing agent is regenerated by heating said bed in the presence of an oxidizing gaseous atmosphere, wherein the temperature of the bed is maintained at a temperature between about 500° C. and about 1300° C. in both the desulfurization and the regeneration steps wherein said pellets comprise more than about 50% by weight manganese oxide and less than about 50% by weight of aluminum oxide and wherein said pellets were sintered by heating to a temperature between about 1000° C. and about 1400° C.

4,164,545

USE OF MANGANESE DIOXIDE ABSORBENT IN TREATING WASTE GASES

Richard L. Scott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 3, 1978, Ser. No. 948,132

Int. Cl.² B01D *53/34*

U.S. Cl. 423—239 **6 Claims**

1. In a system for treating waste gas with an absorbent which contains MnO_2 a method for recovering manganese from the spent absorbent said method comprising:

(1) contacting spent absorbent with water or aqueous solution to solubilize salts of manganese;

(2) contacting solubilized salts of manganese with an acidic ion exchange resin that retains manganese and passes acids formed from manganese salts;

(3) contacting ion exchange resin and contained manganese with dilute HNO_3 to obtain $Mn(NO_3)_2$ solution; and

(4) precipitating MnO_2 from said $Mn(NO_3)_2$ solution.

4,164,546

METHOD OF REMOVING NITROGEN OXIDES FROM GASEOUS MIXTURES

Albert B. Welty, Jr., deceased, late of Westfield, N.J., and by Doris M. Prescott, executrix, Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 534,283, Dec. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 285,818, Sep. 1, 1972, abandoned. This application Oct. 31, 1977, Ser. No. 847,038

Int. Cl.² B01D *53/34*

U.S. Cl. 423—239 **13 Claims**

1. A process for treating a gaseous mixture comprising nitrogen oxide, sulfur dioxide and oxygen in order to reduce selectively the nitrogen oxide content thereof by conversion of the nitrogen oxide to nitrogen which comprises:

(1) adding ammonia to said gaseous mixture;

(2) contacting said gaseous mixture and said ammonia under oxidizing conditions at a gas inlet temperature of about 600° F. to about 900° F. with a non-noble metal containing catalyst comprising copper oxide or vanadium pentoxide supported on a refractory carrier, said copper oxide or vanadium pentoxide being converted during the course of contact with said gaseous mixture and ammonia to copper sulfate or vanadium sulfate while remaining effective for promoting the conversion of nitrogen oxide to nitrogen; and

(3) discontinuing contacting said catalyst with said gaseous mixture and ammonia, contacting said catalyst with a reducing gas at a gas inlet temperature of about 600° F. to about 900° F. and thereafter continuing contacting said catalyst with said gaseous mixture and ammonia as in steps (1) and (2).

4,164,547

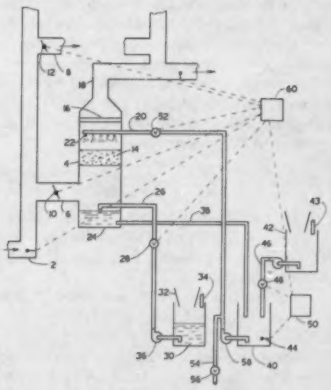
PROCESS FOR REMOVING SULFUR DIOXIDE IN A WET SCRUBBER

Alexander P. Simko, Anchorage, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 6, 1977, Ser. No. 794,553

Int. Cl.² B01D *53/34*

U.S. Cl. 423—242 **2 Claims**



1. A process for the removal of oxides of sulfur from a flue gas stream comprising the steps of:

(a) introducing flue gas containing SO_2 to a wet scrubbing device;

(b) introducing simultaneously with said flue-gas stream a controlled amount of SO_2 reactant scrubbing solution and a controlled amount of fly-ash solution to said scrubber to form a resulting solution;

(c) monitoring the amount of SO_2 to said scrubbing device by establishing a signal to an analog computer, said computer being provided with preselected operating condi-

tions of said process, said computer signalling first flow control means for said SO_2 reactant scrubbing solution and second flow control means for said fly-ash solution whereby the amount of SO_2 reactant scrubbing solution and the amount of fly-ash solution added to the wet scrubber is determined by said signals from said computer;

(d) removing a controlled amount of said resulting solution from said wet scrubbing device; and,

(e) introducing said resulting solution to a recycle tank, reading the pH of said resulting solution in said resulting tank, and adding a controlled amount of an alkali solution to said recycle tank, said control amount being determined by the pH reading, to maintain a preselected pH in said recycle tank at from four to eight, the resulting mixture being said SO_2 reactant scrubbing solution; and,

(f) establishing a signal from the pH reading to said computer, said computer signalling said first and second flow means based on said pH reading and comparing said pH reading with said preselected operating conditions.

4,164,548

PROCESS FOR REMOVING SO_2 FROM GASES

Roberto Vitali; Sergio Villa, both of Milan, and Costante Lotti, Bresso, all of Italy, assignors to "Il Gas Interale" S.p.A., Milan, Italy

Continuation of Ser. No. 701,877, Jul. 1, 1976, abandoned, which is a continuation of Ser. No. 476,035, Jun. 3, 1974, abandoned.

This application Jan. 20, 1978, Ser. No. 871,185

Claims priority, application Italy, June 1, 1973, 24945 A/73; Feb. 20, 1974, 48586 A/74

Int. Cl.[2] C01B *17/00*

U.S. Cl. 423—242 **6 Claims**

1. A process for removal of sulphur dioxide from an effluent gas comprising treating said gas in at least two successive stages with an absorbing solution selected from the group consisting of an alkali sulphite solution and an alkali sulphite and bisulphite solution, part of said absorbing solution having been pretreated with air or with a gas that is inert with respect to the solution to reduce the SO_2 partial pressure of said absorbing solution, wherein said pretreatment of part of the absorbing solution is accomplished as a partial solution regeneration step in a cyclic process in which the pretreated absorbing solution is repeatedly circulated through an absorption stage and a regeneration stage, SO_2 absorbed by the solution in the absorption stage being partially stripped from the solution in the regeneration stage and reabsorbed by the solution concurrently with the absorption by the solution of SO_2 from the SO_2-containing gas, whereby the SO_2 content in the effluent gas is reduced to 50 ppm or less.

4,164,549

LIME SCRUBBING PROCESS FOR SULFUR DIOXIDE REMOVAL FROM GASES

Joseph G. Selmeczi, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1978, Ser. No. 873,280

Int. Cl.[2] C01B *17/00*

U.S. Cl. 423—242 **5 Claims**

1. In a lime scrubbing process for the removal of oxides of sulfur from a gaseous stream, wherein a calcium salt-containing liquor containing 250–5000 parts per million by weight of the liquor of magnesium ion is present within the scrubber, with at least a portion of the effluent from the scrubber clarified and aqueous liquor from said clarifier is returned to the scrubber, and wherein the pH of the effluent from the scrubber is maintained above 5.3 while the pH of the inlet liquor to the scrubber is maintained below 9.8, and wherein interruption of flow of said gaseous stream through the scrubber occurs, the improvement comprising:

adjusting the pH of said liquor to a value between 9.8–12.0 during interruption of flow of the gaseous stream through the scrubber to convert sulfite and bisulfite ions in said liquor to precipitated solids and prevent oxidation of the same during said interruption of flow; and

upon resuming flow of said gaseous stream through the scrubber, adding magnesium-containing lime after said inlet pH has reached a value below 9.8.

4,164,550

PRODUCTION OF STABILIZED WET PROCESS PHOSPHORIC ACID

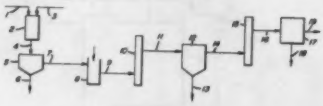
Richard N. Hill, Lakeland, Fla., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 812,319, Jul. 1, 1977, Pat. No. 4,110,422, which is a continuation-in-part of Ser. No. 683,756, May 6, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,381

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] C01B *25/16*

U.S. Cl. 423—321 R **15 Claims**



1. The method of preparing a wet process phosphoric acid substantially free from post-precipitation that includes the steps:

(a) to a wet process phosphoric acid having a P_2O_5 content of 36 to 46 weight percent from which the suspended solids have been removed, adding 0.05 to 2.0 weight percent of an aluminum silicate material based on the contained weight of P_2O_5 in the acid to provide an aluminum silicate material-acid mix; said aluminum silicate material being finely divided so as to be soluble in the phosphoric acid as the concentration of the acid is increased from 36–46 weight percent P_2O_5 to an increased P_2O_5 within the range of 42–52 weight percent;

(b) concentrating the aluminum silicate material-acid mix to said 42–52 weight percent P_2O_5 in an evaporation zone thereby to provide an aluminum silicate material/acid solution;

(c) transferring the concentrated solution to a crystallizing zone having an overflow stream and an underflow stream;

(d) recovering the overflow stream and subsequently evaporating to a concentration of up to 63% P_2O_5 to provide wet-process phosphoric acid substantially free of post-precipitation.

4,164,551

PREPARATION OF ZEOLITE

Curtis H. Elliott, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,031

Int. Cl.[2] C01B *33/28*

U.S. Cl. 423—330 **4 Claims**

1. A process for preparing Type Y zeolite which comprises:

(a) preparing a reaction mixture containing the following mol ratio of reactants:

3 to 6 Na_2O: 8 to 12 SiO_2:Al_2O_3:120 to 200 H_2O;

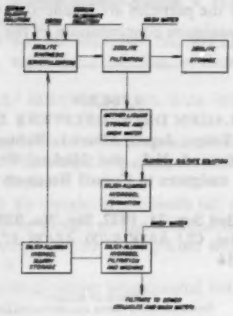
(b) including in said reaction mixture zeolite nucleation centers having the following mol composition:

15 to 17 Na_2O: 14 to 16 SiO_2:Al_2O_3:285 to 357 H_2O;

(c) heating said mixture to obtain Type Y zeolite and mother liquor which contains silicate;

(d) separating said Type Y zeolite from the mother liquor, and reacting said mother liquor with sufficient aluminum sulfate to precipitate substantially all the silicate as silica-alumina hydrogel;

(e) recovering and washing said hydrogel to remove sodium sulfate therefrom; and



(f) including said hydrogel as part of the reaction mixture prepared in step (a).

4,164,552

PREPARATION OF HYDROGEN CYANIDE

Frank J. Weigert, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1978, Ser. No. 905,970
Int. Cl.[2] C01C *3/02*
U.S. Cl. 423—376 **10 Claims**

1. The process of preparing HCN by reacting NH_3 in a nonoxidative atmosphere at 650°–950° C. with a hydrocarbon having at least 3 carbon atoms, in the presence of a catalytically effective amount of a catalyst of the formula

$$M_a(M' \text{ oxide})_b(Si \text{ oxide})_c(Al \text{ oxide})_d$$

wherein
M is Pd, Ir or Pt;
M' is Ag, Ce, Rare Earths, Cr, Cu, La, Mg, Ti, V, W, Zn, Zr;
d=1
a=0 or up to 5% of weight of oxides (b+c+d)
b=0 to 0.2
c=0 to 100;
and recovering HCN.

4,164,553

PLASMA ARC PROCESS FOR THE PRODUCTION OF CHEMICAL PRODUCTS IN POWER FORM

Giancarlo Perugini, Novara, and Enzo Marcaccioli, Perugia, both of Italy, assignors to Montedison S.p.A., Milan, Italy

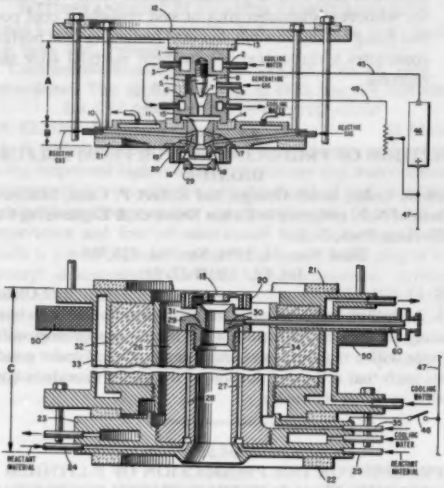
Filed Feb. 14, 1977, Ser. No. 768,572
Claims priority, application Italy, Feb. 17, 1976, 20241 A/76
Int. Cl.[2] C01B *31/30*; C04B *31/16*
U.S. Cl. 423—440 **8 Claims**

1. In a plasma-arc process for the production of a carbide powder, according to endothermic reactions the improvement comprising carrying out, in a furnace with an anodic function without dissipative cooling, a series of steps comprising:

(a) forming a chemically reactive fluidodynamic mass having a high thermal content and a high concentration of the desired reactive species, by injecting into the electronic column of a noble gas plasma-arc at least one metal or metalloid halide and a hydrocarbon, the injection taking place, with mixing, through a choker-injector-mixer nozzle which is electrically insulated;

(b) causing the electronic condensation of said mass inside a main nozzle anode made of tungsten or graphite, without dissipative cooling;

(c) injecting into said electronically condensed mass the residual part of said reactants necessary to bring about the desired main chemical reaction for producing the carbide powder; and wherein the total volume of the reactants is equal to or greater than 20% of the total aeriform volume formed by the total volume of the reactants plus the volume of noble gas that pilots and stabilizes the plasma-arc itself.



4,164,554

METHOD FOR CONVERTING CALCIUM SULFOXY COMPOUNDS INTO CALCIUM CARBONATE COMPOUNDS

Metro D. Kulik, Pittsburgh, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,543
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—567 A **7 Claims**

1. A method for converting calcium sulfoxy compounds selected from the group consisting of $CaSO_x$ and $Ca(HSO_x)_2$ wherein x is 3 or 4 into calcium carbonate, said method consisting essentially of:

(a) converting said $Ca(HSO_x)_2$ compounds into said $CaSO_x$ compounds by reacting said $Ca(HSO_x)_2$ compounds with $CaCO_3$ in the presence of water;

(b) reacting said $CaSO_x$ compounds with NH_3 and CO_2 in the presence of water to produce NH_4HSO_x wherein x is 3 or 4 and $CaCO_3$;

(c) separating said NH_4HSO_x and said $CaCO_3$;

(d) reacting said NH_4HSO_x with H_2S to produce ammonium polysulfide;

(e) decomposing said ammonium polysulfide to produce NH_3, H_2S, sulfur and water; and

(f) recovering said sulfur from said NH_3, H_2S and water.

4,164,555

POLLUTION CONTROL SYSTEM AND METHOD FOR THE REMOVAL OF SULFUR OXIDES

Peter Steiner, Edison, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 12, 1977, Ser. No. 832,506
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—569 **13 Claims**

1. A method for treating a sulfur oxides-saturated carbonaceous adsorbent char comprising the steps of:

passing said char to a vessel;

introducing combustion-supporting air into said vessel;

introducing a quantity of coal into said vessel; and

simultaneously burning a portion of said quantity of coal as

a fuel to provide heat to desorb said char of said sulfur oxides and reacting said sulfur oxides with the remaining portion of said coal to produce gaseous elemental sulfur, the adsorbent characteristics of said remaining coal portion being enhanced such that said remaining coal portion constitutes a carbonaceous adsorbent material after said reacting.

4,164,556

METHOD OF PRODUCING SULFUR FROM SULFUR DIOXIDE

Frederic Leder, South Orange, and Robert P. Cahn, Millburn, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 14, 1974, Ser. No. 523,705
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—569 **29 Claims**

1. A method for producing sulfur from sulfur dioxide comprising the step of contacting a gas stream comprising sulfur dioxide with a reducing gas comprising methanol under conditions such that at least a portion of the sulfur dioxide is converted to sulfur thermally.

4,164,557

PROCESS FOR THE PRODUCTION OF β-LITHIUM ALUMINATE AND NEEDLE-SHAPED PRODUCT

Martin Feldmann, Hanau, Fed. Rep. of Germany; Edgar Koberstein, Alzenau, Austria, and Klaus Seibold, Hanau, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,365
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711420
Int. Cl.[2] C01F *7/02*
U.S. Cl. 423—600 **14 Claims**

1. A process for the production of β-lithium aluminate which has the formula: $LiAlO_2$, comprising forming an aqueous solution containing lithium ions and aluminum in ionogenic or elementary form, precipitating a lithium hydroxoaluminate of the composition $Li_2O.Al_2O_3.nH_2O$ wherein n is at least 1 from said aqueous solution at a pH value above 7 and at concentrations of the two metal components of at least 0.1 g-atoms/liter, at most 6 g-atoms per liter, wherein Li and Al are present in equimolar ratios or wherein there is an excess of Li present, washing the product obtained by said precipitating and converting said product by annealing in the temperature range between 200° C. and 800° C. into β-lithium aluminate.

4,164,558

METHOD FOR OPTIMIZING REAGENTS FOR AGGLUTINATION REACTIONS

Gustav K. von Schulthess; Richard J. Cohen, both of Brookline, and George B. Benedek, Belmont, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 22, 1976, Ser. No. 743,678
Int. Cl.[2] G01N *31/00, 33/16*
U.S. Cl. 424—12 **6 Claims**

1. The process for forming a composition comprising an aqueous suspension of antigen-coated or antibody-coated particles to maximize sensitivity for determining the concentration of the agglutinator for the composition which comprises

(A) coating carrier particles with the antigen or antibody,

(B) suspending the coated particles in a liquid having a pH as far as possible from the isoelectric point of the particle coating without significantly reducing the binding capacity of the coating, to maximize particle charge,

(C) increasing the ionic strength of the composition obtained by (B) to reduce the range of coulomb interaction until nonspecific agglutination occurs and

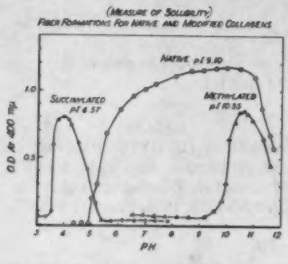
(D) reducing the ionic strength of the composition by (C) to just below that where nonspecific agglutination occurs so that coulomb effect and the van der Waals forces on and exerted by the particles are balanced to effect determination of a minimum concentration of the agglutinator.

4,164,559

COLLAGEN DRUG DELIVERY DEVICE

Teruo Miyata, Tokyo, Japan; Albert L. Rubin; Kurt H. Stenzel, both of Englewood, N.J., and Michael W. Dunn, New Rochelle, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,302
Int. Cl.[2] A61K *9/00, 47/00, 37/12*
U.S. Cl. 424—14 **9 Claims**



1. An ophthalmic drug delivery system comprising (a) an enzyme-extracted, chemically-modified collagen thin membrane carrier selected from the group consisting of esterified collagen and acylated collagen and having a pH in the range of 5.5–9.0 whereby the carrier is soluable in the tear fluid under physiologic conditions, and (b) an ophthalmically active drug incorporated into said carrier.

4,164,560

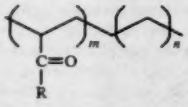
SYSTEMS FOR THE CONTROLLED RELEASE OF MACROMOLECULES

Moses J. Folkman, 18 Chathman Cir., Brookline, Mass. 02146, and Robert S. Langer, Jr., 1200 Commonwealth, Apt. 2, Allston, Mass. 02134

Filed Jan. 5, 1977, Ser. No. 756,892
Int. Cl.[2] A61K *9/26, 37/26*
U.S. Cl. 424—22 **12 Claims**

1. A therapeutic system for the continuous and controlled administration of insulin, said system being in the form of a body which is sized and shaped for placement in the environment of use, comprising a two-phase composition of:

(a) a first phase comprising a biocompatible, plastically deformable, hydrophobic matrix having an aqueous fluid sorptivity not greater than 50% by weight, of ethylene-vinyl ester copolymer of the general formula:



wherein R is a member selected from the group consisting of hydrogen, lower alkyl of 1 to 7 carbons and phenyl, the polymer being insoluble in the environment of use, substantially impermeable to diffusion therethrough of insulin, and containing in admixture therewith;

(b) a second phase comprising from about 3 to 90 parts by weight of agglomerated particles of insulin.

4,164,561

INSECT REPELLENT

Horst Hautmann, Johann-Strasse-Strasse 9, D-8858 Neuburg, Fed. Rep. of Germany

Filed Apr. 26, 1977, Ser. No. 791,110

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 2618975

Int. Cl.[2] A01N *9/02, 9/08, 9/24, 9/20*

U.S. Cl. 424—29 8 Claims

1. A housefly repellent which consists essentially of:

(A) about 85.70% by weight of perfume which contains 30% by weight of citral;

(B) about 7.15% by weight of citronella oil; and

(C) about 7.15% by weight of diethyltoluamide.

7. A cellulose porous carrier impregnated with the housefly repellent of claim 1.

8. An asbestos porous carrier impregnated with the housefly repellent of claim 1.

4,164,562

AEROSOL HAIR SPRAY CONTAINING AN ETHYL OR BUTYL MONOESTER OF A COPOLYMER OF MALEIC ACID AND A VINYL MONOMER

Arun Nandagiri, Lake Hiawatha; Uma Tripathi, Oakland, and LeRoy Hunter, Randolph, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 21, 1977, Ser. No. 844,241

Int. Cl.[2] A61K *7/11*

U.S. Cl. 424—47 5 Claims

1. A hair spray composition consisting essentially of (a) about 65 to 80 percent by weight of a liquid concentrate phase and (b) about 20 to 35 percent by weight of a lighter hydrocarbon propellant phase comprising propane, n-butane, isobutane, or mixtures thereof; said liquid concentrate phase comprising, based on the total weight of (a) and (b), from about 2 to 5 percent by weight of a film-forming carboxylic acid containing polymeric material which is a copolymer of an alkyl vinyl ether and the monoethyl- or monobutyl ester of maleic acid; from about 2 to 12 percent by weight water; from about 0.1 to 0.3 weight percent of an organic base neutralizer for said carboxylic acid-containing polymeric material; and sufficient amount of a material selected from the group consisting of ethanol, isopropanol, or mixtures thereof, to total 100 percent.

4,164,563

NON-GREASY COMPOSITIONS

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 24, 1975, Ser. No. 561,421

Int. Cl.[2] A61K *31/745*

U.S. Cl. 424—83 17 Claims

1. A non-greasy occlusive composition for topical application to the skin comprising from about 40 to 90 percent by weight of a greasy viscous base, and from about 10 to 60 percent by weight of a solid, non irritating ointment-forming powder; wherein said viscous base is selected from the group consisting of solid petrolatum, animal oils, mineral oils, and synthetic oils, wherein said oils have been thickened by an agent selected from the group consisting of waxes and hydrocarbon polymers; and wherein said ointment forming powder comprises a polyolefin having from 2 to 6 carbon atoms in the recurring unit, a molecular weight of from about 3,000 to 150,000 and a number average maximum dimension of less than about 30 microns, said viscous base being substantially non-absorbed by said ointment-forming powder below about 50° C., and wherein said greasy viscous base is mixed with said ointment-forming powder at a temperature of less than about 50° C.

4,164,564

OINTMENT AND CREAM BASES CAPABLE OF WITHSTANDING ELEVATED TEMPERATURES

James L. Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 753,968, Dec. 23, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 930,848

Int. Cl.[2] A61K *31/745, 9/10, 9/00, 47/00*

U.S. Cl. 424—83 11 Claims

1. A gelled mineral oil vehicle for medicinals said vehicle having improved high temperature stability and water-absorption properties, comprising a gelled mineral oil and containing a water absorption promoter comprising an oily liquid at room temperature and free of unsaturated fatty acid moiety, and which is a member selected from the group consisting of triglyceryl diisostearate, sorbitan sesqui-isostearate, sorbitan triisostearate, polyethylene glycol isostearyl ether, polyethylene glycol diisostearyl ether, and mixtures thereof, said vehicle being stable at temperatures of 80° C. or higher, without becoming rancid, and being capable of absorbing 2 to 10 times its weight in water.

4,164,565

VACCINE FOR ACTIVE IMMUNIZATION CONTAINING HEPATITIS B SURFACE ANTIGEN AND ASSOCIATED ANTIGEN

Alfred M. Prince, Stamford, Conn.; John Vnek, Bronx; Robert A. Neurath, New York, both of N.Y., and Christian Trepo, Bron, France, assignors to New York Blood Center, Inc., New York, N.Y.

Continuation of Ser. No. 631,961, Nov. 17, 1975, Pat. No. 4,118,479. This application Sep. 7, 1977, Ser. No. 831,327

Claims priority, application France, Mar. 14, 1975, 75 08046

Int. Cl.[2] A61K *39/12*

U.S. Cl. 424—89 1 Claim

1. An antigenic mass effective against viral hepatitis comprising a solution of a physiologically acceptable medium substantially free of human serum proteins, said solution containing e-antigen, dissolved in said medium, said antigen being present in an amount sufficient, when introduced into a host animal, to effect formation of antibodies corresponding thereto, said antigenic mass obtained from the serum of a chronic HBsAg carrier whose serum contains e-antigen, said antigenic mass being substantially free of combined anti-e antibody.

4,164,566

HEPATITIS A VIRUS CELL CULTURE IN VITRO

Philip J. Provost, Harleysville, and Maurice R. Hilleman, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 17, 1978, Ser. No. 934,293

Int. Cl.[2] A61K *39/12;* C12K *7/00*

U.S. Cl. 424—89 9 Claims

1. A method of growing hepatitis A virus in cell culture comprising modification of the virus by carrying out at least one passage of the virus in a susceptible sub-human primate, removing the infected liver, inoculating an in vitro cell culture with the infected liver, incubating the cell culture until hepatitis A antigen is detectable in the culture cells or fluid, and carrying out at least one additional in vitro passage of the virus in cell culture.

8. A live attenuated hepatitis A virus vaccine comprising an antigenic and immunogenic hepatitis A virus which has been modified by at least one passage in the liver of a sub-human primate susceptible to hepatitis A virus disease and by at least two serial in vitro passages in cell culture.

4,164,567

PROCESS FOR RECOVERING MACROMOMYCIN

Hamao Umezawa, and Tomio Takeuchi, both of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed May 31, 1977, Ser. No. 801,492
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—123 3 Claims

1. A process for forming a precipitate containing macromomycin from a macromomycin culture which comprises,

adding a neutralizer to a culture filtrate of macromomycin in a saturated solution of ammonium sulfate which is maintained at a temperature of about 5° C., said neutralizer (a) being added in an amount in the range of from 0.25 percent to 1.0 percent based on the weight of said macromomycin culture and (b) being selected from the group consisting of sodium carbonate, calcium carbonate, sodium bicarbonate, dibasic sodium phosphate, dibasic potassium phosphate, monobasic sodium phosphate and monobasic potassium phosphate,

immediately thereafter, adding a coagulant to said macromomycin culture that is neutralized by said neutralizer, said coagulant, (a) being added in an amount of from 0.25 percent to 1.0 percent, based on the weight of said macromomycin culture, to provide a mixture having a pH in the range of 5.0 to 7.5, and (b) being selected from a group consisting of ferrous sulfate, ferrous chloride, ferric sulfate, ferric chloride, sodium aluminate, aluminum sulfate, and

recovering a precipitate containing a high concentration of macromomycin therefrom.

4,164,568

ORAL SCOUR FORMULATIONS WITH CITRATE

Robert J. Bywater, Tadworth, England, assignor to Beecham-group Limited, Great Britain

Filed Mar. 11, 1977, Ser. No. 776,536
Claims priority, application United Kingdom, Mar. 27, 1976, 12417/76; Mar. 27, 1976, 12418/76
Int. Cl.[2] A61K *33/14, 31/70, 31/19, 31/195*
U.S. Cl. 424—153 23 Claims

1. A veterinary composition useful for treating diarrhoea in animals which comprises 40–80% of an actively absorbed monosaccharide, 7.5–30% of an actively absorbed, naturally occcurring amino acid, 0.5–5% of citric acid and 0.1–5% of a non-toxic salt of citric acid.

4,164,569

STABILIZED SOFT GELATIN CAPSULE COMPOSITION OF 1 α-HYDROXY-VITAMIN D

Heizi Ikushima, Kawaguchi; Hiroto Nakano, Kodaira; Kazuo Igusa, Tokorozawa, and Sadao Bessho, Tokyo, all of Japan, assignors to Chugau Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1977, Ser. No. 786,483
Claims priority, application Japan, Apr. 19, 1976, 51-43615
Int. Cl.[2] A61K *31/00, 31/59, 31/195*
U.S. Cl. 424—174 11 Claims

1. A method for stabilizing 1α-hydroxy-vitamin D, encapsuled in a soft gelatin capsule, against deactivation caused by ultraviolet light, comprising:

incorporating an ultraviolet light deactivation preventive amount of sorbic acid, its salt or a combination thereof in the gelatin of said capsule or with the vitamin D encapsulated by said capsule.

4,164,570

STABILIZED AQUEOUS CATECHOLAMINE SOLUTIONS

David Clough, 39, The Stewarts, Bishops Stortford, Hertfordshire CM21 2NU, and Gary C. F. Ruder, 57 Greygoose Park, Harlow, Essex, both of England

Continuation of Ser. No. 507,593, Sep. 20, 1974, abandoned. This application Nov. 22, 1976, Ser. No. 744,045
Claims priority, application United Kingdom, Sep. 24, 1973, 44660/73; Sep. 24, 1973, 44661/73
Int. Cl.[2] A61K *31/00, 47/00, 31/195, 31/135*
U.S. Cl. 424—175 6 Claims

1. A borate-free aqueous solution for the topical application to the eyes in the treatment of open-angle glaucoma, said solution comprising from 0.1 to 2.0 percent of epinephrine, said epinephrine containing less than 1 part per million of heavy metal calculated as ferric ion, from 0.5 to 2.0 percent of N-acetyl cysteine, said N-acetyl cysteine being present in at least equimolar proportion to the epinephrine whereby it solubilizes the epinephrine as well as stabilized the solution, ammonium hydroxide in an amount sufficient to give a pH of less than 7.5 and an ammonium buffer, said solution having a pH in the range of from 6.0 to 7.5.

4,164,571

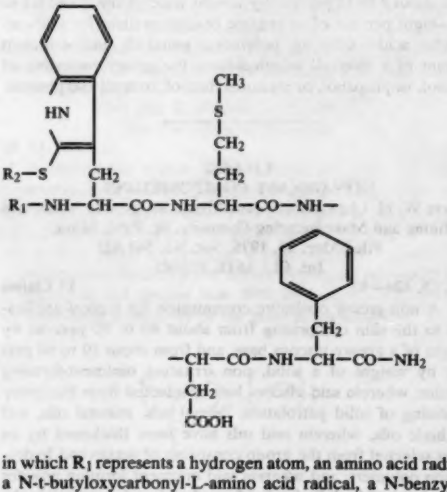
MEDICAMENT WHICH ANTAGONIZES THE ACTION OF GASTRIN AND RELATED POLYPEPTIDES

Serge J. E. Bonfils; Juliette M. Dubrasquet, both of Paris; Pierre Fromageot, Versailles; Jean P. Girma, Gif sur Yvette; Miguel Lewin, Asnieres, and Jean L. Morgat, Paris, all of France, assignors to Commissariat a l'Energie Atomique and Institut National de la Sante et de la Recherche Medicale, both of Paris, France

Filed Sep. 21, 1977, Ser. No. 835,394
Claims priority, application France, Sep. 21, 1976, 76 2833
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 22 Claims

1. A medicament, which comprises as active substance a polypeptide amide derivative of general formula:

(I)



in which R_1 represents a hydrogen atom, an amino acid radical, a N-t-butyloxycarbonyl-L-amino acid radical, a N-benzyloxycarbonyl amino acid radical or a N-benzoyl amino acid radical, wherein the term amino acid radical means an amino acid radical selected from the group consisting of β-alanyl, glycyl, pyroglutamyl, N-benzoyl glycyl, N-t-butyloxycarbonyl-L-glycyl, N-t-butyloxycarbonyl-L-alanyl, lysile and N benzyloxycarbonyl-L-propyl or a peptide radical selected from the group consisting of:

L-pyroglutamyl-L-glycyl-L-prolyl-L-tryptophanyl-L-leu-

cyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-alanyl-L-tyrosyl-L-glycyl, L-pyroglutamyl-L-glycyl-L-propyl-L-typtophanyl L-leucyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-alanyl-L-tyrosyl-(oxysulphonic in the 4-position of the phenyl nucleus), L-pyroglutamyl-L-glutamyl-L-aspartyl-L-tyrosyl-L-threonyl-L-glucyl, N-t-butyloxycarbonyl-L-aspartyl-L-tyrosyl-L-methionyl-L-glycyl, L-pyroglutamyl-L-leucyl-L-glycyl-L-prolyl-L-glutaminyl-L-glycyl-L-histidyl-L-prolyl-L-seryl-L-leucyl-L-valyl-L-alanyl-L-aspartyl-L-prolyl-L-seryl-L-lysyl-L-lysyl-L-glutaminyl-L-glycyl-L-propyl-L-tryptophanyl-L-leucyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glu amyl-L-glutamyl-L-glutamyl-L-alanyl-L-tyrosyl-L-glycyl, L-leucyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-alanyl-L-tyrosyl-L-glycyl,

and L-leucyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-glutamyl-L-alanyl-L-tyrosyl-(oxysulphonic in the 4-position of the phenyl nucleus)-L-glycyl, and R_2 represents 2-nitrophenyl or 2,4-dinitrophenyl.

4,164,572

ZINC BACITRACIN COMPOSITION FOR USE AS A FEED SUPPLEMENT AND METHOD FOR MAKING THE SAME

Brigt Oystese, Haslum, Norway, assignor to A/S Apothekernes Laboratorium for Specialpraeparater, Norway

Continuation-in-part of Ser. No. 730,092, Oct. 6, 1976, Pat. No. 4,096,246. This application Apr. 26, 1978, Ser. No. 899,907

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.[2] A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **26 Claims**

1. A process for the production of a zinc bacitracin composition with enhanced stability suitable for use in animal feeds which includes precipitating zinc bacitracin from a fermentation broth to form a slurry, adjusting the pH of the fermentation broth with alkali to within the range of 6.0 to 7.0, adding about 50 to 100 weight percent based on the dry matter of the slurry of a finely divided carrier in which 80 weight percent of the particles making up the carrier have a dimension of below 40 microns, blending the mixture to uniformly disperse the carrier particles, spray drying such uniform dispersion at a temperature of between about 300° to 450° C. so that the water is rapidly removed to produce finely divided substantially spherical particles containing the zinc bacitracin in intimate contact with the carrier.

4,164,573

COMPOSITION AND METHOD FOR MAKING A SUPPOSITORY FOR INTRODUCING A HYPOGLYCEMIC AGENT INTO A MAMMAL

Alvin M. Galinsky, 5518 Covode St., Pittsburgh, Pa. 15217

Filed Jun. 13, 1975, Ser. No. 586,638

Int. Cl.[2] A61K *37/26*

U.S. Cl. 424—178 **9 Claims**

1. An article of manufacture for the introduction of hypoglycemic agents into the bloodstream for the treatment of diabetes in mammals by a rectally administered suppository comprising:

(a) a suppository base consisting of a wax-like substance of partially hydrogenated cottonseed oil 16.7 percent by weight of the suppository and completely hydrogenated peanut oil 30.0 percent by weight of the suppository;

(b) a synthetic surface active agent having polyoxyethylene stearates with a hydrophile-lipophile balance of 12.73 on the Griffin HLB scale;

(c) a physiological surface active agent 0.8 percent by weight of the suppository selected from the group consisting of salts of cholic acid, salts of glycocholic acid, salts of taurocholic acid, salts of glycotaurocholic acid, salts of deoxycholic acid, salts of glycodeoxycholic acid, salts of taurodeoxycholic acid, salts of glycodehydrocholic acid, salts of taurodehydrocholic acid, salts of glycolithocholic acid, salts of taurolithocholic acid, salts of glycochenodeoxycholic acid, salts of taurochenodeoxycholic acid, synthetic lecithin and lysolecithin; and

(d) insulin which is 7.5 percent by weight of the suppository.

4,164,574

USE OF POLYQUATERNARY AMMONIUM METHYLENE PHOSPHONATES AS MICROBIOCIDES

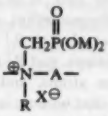
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 414,946, Nov. 12, 1973, Pat. No. 4,084,950, which is a division of Ser. No. 237,883, Mar. 24, 1972, Pat. No. 3,792,084. This application Oct. 14, 1977, Ser. No. 842,147

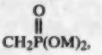
Int. Cl.[2] A01N *9/36*

U.S. Cl. 424—199 **10 Claims**

1. The process of controlling microbiological growth in an aqueous system which comprises adding to said system a microbiologically effective amount of a polyquaternary compound having the repeating unit of the formula



where R is



alkyl, aryl, alkenyl, alkaryl, aralkyl or cycloalkyl, A is alkylene having 2 to 10 carbon atoms, alkaralkylene having 8 to 20 carbon atoms, dialkylene ether wherein each alkylene group has 1 to 10 carbon atoms, alkenylene, or alkinylene; M is hydrogen, ammonium, an alkali metal or alkaline earth metal; X is Br, I or Cl.

4,164,575

COMBATING PESTS WITH O-ALKYL-O-TRIFLUOROMETHYLSULPHINYLPHENYL-THIONO(THIOL)-PHOSPHORIC ACID ESTERS

Hellmut Hoffmann, Wuppertal; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

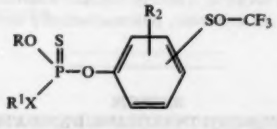
Filed Mar. 3, 1978, Ser. No. 883,001

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709932

Int. Cl.[2] A01N *9/36*; C07F *9/17*

U.S. Cl. 424—216 **10 Claims**

1. An O-alkyl-O-trifluoromethylsulphinylphenylthiono(thiol)-phosphoric acid ester of the formula



wherein

R and R^1 each independently is alkyl,

R^2 is hydrogen, halogen or alkyl, and

X is oxygen or sulphur.

2. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of an ester according to claim 1.

4,164,576

BENZOXAZINE CARBOXAMIDES

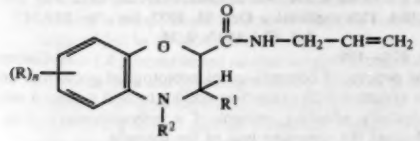
John B. Carr, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 889,759, Mar. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 778,816, Mar. 17, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,336

Int. Cl.[2] C07D *265/36*; A61K *31/35*

U.S. Cl. 424—248.54 **4 Claims**

1. A compound of the formula



(I)

wherein n is zero, one or two, R is lower halogen, amino, methylsulfonylamino, trifluoromethyl, alkyl or alkoxy of from one to six carbon atoms, or phenyl; R^1 is hydrogen or alkyl of from one to four carbon atoms, and R^2 is hydrogen, or alkyl of from one to four carbon atoms, and hydrohalic acid salts thereof, with the proviso that when n is 2, the two moieties, R, are substituted on the carbon atoms at the 6- and 7-positions in the molecule.

3. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally an effective amount of a compound of claim 1.

4,164,577

6-(2-ACYLAMINO-2-ARYLACETAMIDO)PENICILLANIC ACIDS

Yoshiharu Morita, Yokohama; Junichi Ohya, Zama, and Tadashi Shirasaka, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

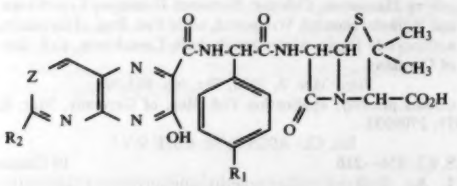
Filed Feb. 22, 1978, Ser. No. 880,132

Claims priority, application Japan, Apr. 4, 1977, 52-38227

Int. Cl.[2] A61K *31/43, 31/165*; C07D *499/68*

U.S. Cl. 424—251 **16 Claims**

1. A compound having the formula:



wherein R_1 is hydrogen or hydroxy; R_2 is hydrogen, methyl or ethyl; and Z is —CH=, —N= or —CX= wherein X is chloro or bromo, or the non-toxic, pharmaceutically acceptable salt thereof.

4,164,578

PYRAZOLO[1,5-C]QUINAZOLINE DERIVATIVES AND RELATED COMPOUNDS

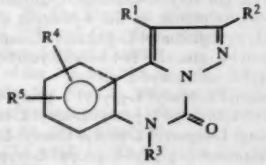
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 820,289, Jul. 29, 1977, Pat. No. 4,128,644. This application Jul. 19, 1978, Ser. No. 925,738

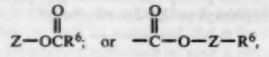
Int. Cl.[2] A61K *31/505*; C07D *403/14*

U.S. Cl. 424—251 **12 Claims**

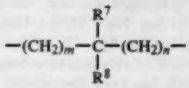
1. A compound of the structure



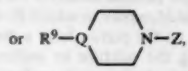
wherein R^1 represents hydrogen lower alkyl, phenyl optionally monosubstituted with R^4, R^2 is



wherein Z is a single bond or



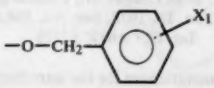
and R^6 is amino, lower alkylamino; dilower alkylamino; halolower alkyl; phenylamino wherein phenyl may be optionally monosubstituted with lower alkyl, dilower alkyl or halo; or



(wherein R^9 is hydrogen or lower alkyl, Q is CH or N),

R^3 is hydrogen, lower alkyl, benzyl or phenyl optionally monosubstituted by an R^4 radical as defined below;

R^4 and R^5 may be the same or different and are hydrogen, lower alkyl, lower alkoxy, hydroxy, lower alkanoyloxy, or



(X_1 is hydrogen, lower alkoxy, or NO_2);

R^7 and R^8 may be the same or different and represent hydrogen, lower alkyl, phenyl optionally substituted with X_1 or benzyl optionally substituted with X_1,

$(CH_2)_m$ and $(CH_2)_n$ represent a single bond or straight or branched chain alkylene radicals; and

m and n represent the number of carbons in the longest normal chain and may be the same or different and are 0 to 10, but m plus n is 10 or less, and

physiologically acceptable salts thereof.

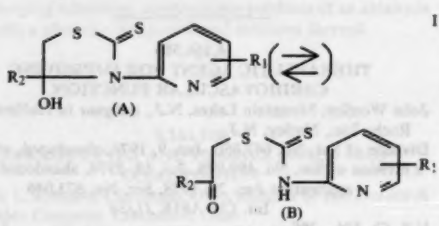
11. A pharmaceutical composition for use in treating allergic conditions comprising an effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,164,579
HYDROXYTHIAZOLIDINE-2-THIONES

Jean D. Bourzat, Paris; Daniel Farge, Thiais; André Léger, Paris, and Gérard Ponsinet, Sucy-en-Brie, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 16, 1978, Ser. No. 906,599
Claims priority, application France, May 17, 1977, 77 15072; Apr. 25, 1978, 78 12187
Int. Cl.[2] C07D *213/71, 409/04;* A61K *31/44*
U.S. Cl. 424—263 **18 Claims**

1. A compound of the formula:



I

wherein R_1 represents alkyl of 1 through 4 carbon atoms in the 4-, 5- or 6-position of the pyridyl radical, and R_2 represents hydrogen or alkyl of 1 through 4 carbon atoms.

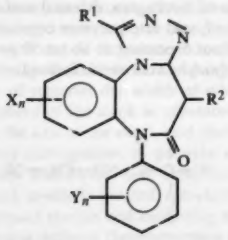
18. A method for the treatment of gastric, duodenal, and peptic ulcers which comprises administering orally to an adult patient between 50 and 1000 mg. per day of a compound claimed in claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **11**, **12**, **13**, **14**, **15** or **16**.

4,164,580
4H-S-TRIAZOLO[4,3-A][1,5]BENZODIAZEPIN-5-ONES AS TRANQUILIZERS

B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 778,823, Mar. 17, 1977, Pat. No. 4,133,809, which is a division of Ser. No. 365,012, May 29, 1973, abandoned. This application Sep. 21, 1978, Ser. No. 944,663
Int. Cl.[2] A61K *31/44*
U.S. Cl. 424—263 **5 Claims**

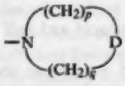
1. A pharmaceutical composition for obtaining a tranquilizing effect comprising a tranquilizing amount of a compound of the formula



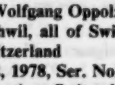
wherein

R^1 is 2-, 3- or 4-pyridyl,

R^2 is H; alkyl of 1–4 carbons optionally substituted by amino, mono-lower alkyl amino, di-lower alkyl amino, cyclic imines of formula



where D is methylene, oxygen or N-R^{10} and where p and q are the same or different and are the integers 1,2, and 3 provided that p+q is at least 1; hydroxy; alkoxy of 1–6 carbons or



where R^5 is alkyl of 1–5 carbons optionally substituted by phenyl or X-substituted phenyl; or R^5 is phenyl optionally substituted by 1 or more X-substituents,

X and Y are the same or different and are hydrogen, F, Cl, Br, trifluoromethyl, alkyl of from 1–6 carbons, alkoxy of from 1–6 carbons, nitro, cyano, amino, alkanoylamino of 1–4 carbons, alkylthio of 1–6 carbons, alkylsulfinyl of 1–6 carbons or alkyl sulfonyl of 1–6 carbons;

R^{10} is hydrogen, alkyl of 1–4 carbons or phenyl optionally substituted by X, wherein X is as defined above;

and n is 0, 1 or 2,

in combination with a pharmaceutically acceptable carrier.

5. A method of obtaining a tranquilizing effect in a mammalian species which comprises administering systemically to said mammalian species a tranquilizingly effective amount of a composition as defined in claim **1**.

4,164,581
1-(2,6-DICHLOROBENZOYL)-3-(4-TRIFLUOROMETHYL-2-THIAZOLYL)UREA AND USE AS INSECTICIDE

Charles G. Gibbs, Prairie Village, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sep. 5, 1978, Ser. No. 939,534
Int. Cl.[2] A01N *9/12;* C07D *277/38*
U.S. Cl. 424—270 **5 Claims**

1. The method of killing insect pests on plants which comprises applying to the infested plants an effective amount of 1-(2,6-dichlorobenzoyl)-3-(4-trifluoromethyl-2-thiazolyl)urea.

5. The insecticidal compound, 1-(2,6-dichlorobenzoyl)-3-(4-trifluoromethyl-2-thiazolyl)urea.

4,164,582
SYNERGISTIC FUNGICIDAL COMPOSITIONS

Pontus A. Harju-Jeanty, Sepänkylä, Finland, assignor to Kemira Oy, Helsinki, Finland

Filed Mar. 31, 1977, Ser. No. 783,441
Claims priority, application Finland, Apr. 13, 1976, 761002
Int. Cl.[2] A01N *9/22, 9/00, 9/12*
U.S. Cl. 424—273 R **2 Claims**

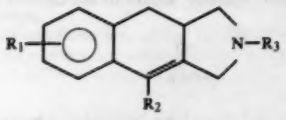
1. A fungicidal composition comprising 2–90% by weight of active ingredients, said active ingredients consisting of A methylbenzimidazole-2-ylcarbamate or one of its salts, and B 1-[β-(allyloxy)2,4-dichlorophenethyl]imidazole or one of its salts wherein said ingredients A and B are in the proportion within the range between 2:1 and 1:2 and an agriculturally acceptable carrier.

4,164,583
BENZ[F]ISOINDOLINE COMPOUNDS

Roland Achini, Therwil; Wolfgang Oppolzer, Vandoeuvres, and Emil Pfenninger, Allschwil, all of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Filed Jun. 22, 1978, Ser. No. 917,948
Claims priority, application Switzerland, Jun. 28, 1977, 7916/77; Jun. 28, 1977, 7917/77
Int. Cl.[2] A61K *31/40;* C07D *209/62*
U.S. Cl. 424—274 **14 Claims**

1. A compound of formula I,



I

wherein

R_1 is hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms, and

R_3 is hydrogen or alkyl of 1 or 2 carbon atoms,

in free base form or in pharmaceutically acceptable acid addition salt form.

3. A pharmaceutical composition comprising a compound of claim 1, in association with a pharmaceutically acceptable diluent or carrier.

4,164,584

ANTI-LEUKEMIC TRICHOTHECENE EPOXIDES

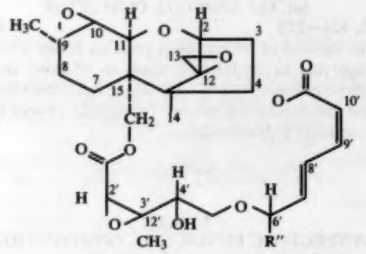
S. Morris Kupchan, deceased, late of Cambridge, Mass. (by Nancy Slater Kupchan, executrix and trustee); Bruce B. Jarvis, University Park, Md., and Richard G. Dailey, Jr., Virginia Beach, Va., assignors to Research Corporation, New York, N.Y.

Filed Oct. 25, 1977, Ser. No. 845,234

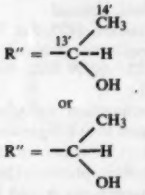
Int. Cl.[2] C07D *493/22*; A61K *31/365*

U.S. Cl. 424—279 **33 Claims**

1. A compound of the formula:



wherein:



12. A sterile aqueous solution or aqueous dispersement of the compound of claim 1.

4,164,585

ANTI-THROMBOTIC COMPOUND AND METHOD OF MAKING AND USING THE SAME FOR PHARMACEUTICAL PURPOSES

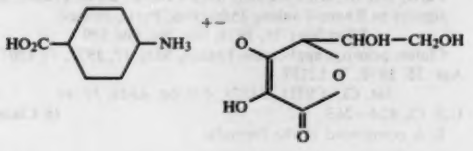
Philip N. Sawyer, Brooklyn, N.Y., and Leon D. Freeman, Corte Madera, Calif., assignors to Cardioquest Corporation

Filed Jul. 1, 1976, Ser. No. 701,874

Int. Cl.[2] A61K *31/375, 31/245*; C07D *307/62*

U.S. Cl. 424—280 **7 Claims**

1. A method of reducing thrombotic tendencies in a host which comprises administering to the host an amount effective therefor of a compound derived from two organic acids, one of said acids being L-ascorbic acid, the other of said acids being para amino benzoic acid, said compound being:



4,164,586

THERAPEUTIC AGENT FOR IMPROVING CARDIOVASCULAR FUNCTION

John Westley, Mountain Lakes, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 647,850, Jan. 9, 1976, abandoned, which is a division of Ser. No. 489,978, Jul. 19, 1974, abandoned. This application Jan. 20, 1978, Ser. No. 871,046

Int. Cl.[2] A61K *31/34*

U.S. Cl. 424—285 **1 Claim**

1. A method for producing myocardial stimulation in a patient requiring said effect which comprises administering to the patient an amount of the compound Iso—lasalocid A which is effective for producing myocardial stimulation.

4,164,587

WATER-BORNE BONDABLE BASE COAT AND SIZE COAT FOR THREE PIECE, TIN-FREE STEEL BEVERAGE CONTAINERS

Robert F. Borman, Delaware, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 608,370, Aug. 27, 1975, Pat. No. 4,098,745. This application Mar. 13, 1978, Ser. No. 885,849

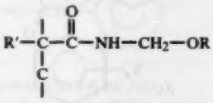
Int. Cl.[2] A21D *10/02*; B65D *85/00*; B32B *15/08*

U.S. Cl. 426—131 **9 Claims**

1. A three piece metal beverage container having an adhesively bonded side seam and having as a base coat or size coat thereon a cured layer of an aqueous coating composition, said composition comprising a blend of an interpolymer and an aldehyde condensation resin wherein:

A. said interpolymer is an aqueous dispersion of an amine-neutralized or partially-neutralized interpolymer formed in the presence of a vinyl polymerization catalyst and in the absence of mercaptan, external surfactant and dispersion stabilizer, said interpolymer consisting essentially of:

(1) from about 5 percent to about 50 percent of a substituted carboxylic acid amide formed in units of the structure:



where R′ is methyl or hydrogen and R is hydrogen or lower alkyl with at least 50 percent of the groups represented by R being lower alkyl;

(2) from about 3 percent to about 30 percent of units formed by vinyl polymerization of ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid and maleic acid and half esters of maleic and fumaric acids;

(3) from about 5 percent to about 75 percent of units derived by vinyl polymerization of hardening monomer selected from the group consisting of styrene, vinyl

toluene and alkyl methacrylates having 1 to 4 carbon atoms; and

(4) from about 5 percent to about 75 percent of units formed by vinyl polymerization of flexibilizing monomer selected from the group consisting of alkyl acrylates having up to 13 carbon atoms in each alkyl group and alkyl methacrylates having from 5 to 16 carbon atoms in each alkyl group; and

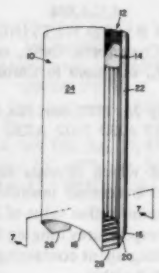
B. said aldehyde condensation resin represents from about 5 percent to about 40 percent by weight of total resin solids and is selected from the group consisting of condensation products of an aldehyde with an amino- or amido-group carrying substance, condensation products of an aldehyde with a phenolic compound and mixtures thereof.

4,164,588

PACKAGE LINER AND FRAGILE SNACK CHIP COMBINATION

Charles L. Johnson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 6, 1977, Ser. No. 857,942
Int. Cl.[2] B65B *23/00*
U.S. Cl. 426—135 **1 Claim**



1. A liner for a package said liner containing a stack of uniformly sized and shaped, fragile, generally eliptical, nonplanar, snack food chips, the chips having a lower surface which is transversely concave as viewed along its major axis, said stack being arranged with corresponding surfaces of the chips similarly oriented and having the transversely concave surfaces thereof facing downwardly to thereby provide a stack support point at each end of the minor axis of the lowermost chip, said liner being formed from an elongated, generally rectangular sheet of material the width of which is less than one half the periphery of the stack as measured along a plane at right angles to the axis of the stack, said sheet having longitudinally extending corrugations to provide stiffness lengthwise and flexibility widthwise, said sheet having a pair of oppositely disposed, centrally located, outwardly bowed, lines of weakness impressed therein and extending across its width, said lines of weakness defining therebetween a support surface of a generally eliptical shape slightly larger than said chips, said support surface being bowed widthwise of the sheet into a downwardly concave condition and the portions of the sheet on each side of the support surface being folded upwardly and formed into a U-shaped, generally tubular conformation receiving the stack, with the support points on the lowermost chip bearing on said support surface at locations closely adjacent the lines of weakness at the central portions thereof such that upon dropping, the momentum of the stack can cause the support points to exert sufficient force on the central portions of the lines of weakness to fracture them, thus absorbing energy which would otherwise damage the stack.

4,164,589

MEAT PUMPING PROCESS

Victor V. Kadane, Langen, Fed. Rep. of Germany; Edwin W. Meyer, Chicago, and Robert W. Whitney, Mundelein, both of Ill., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 761,424, Jan. 21, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,240
Int. Cl.[2] A23L *1/31*
U.S. Cl. 426—281 **3 Claims**

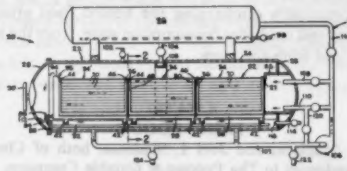
1. A method of brine pumping meat comprising forming a brine with soy protein isolate and water, said isolate having at least 90% protein and being non-gellable upon heating a 10% dispersion of said isolate in water to 100° C. for 30 minutes whereby the thus-heated isolate has, after cooling to 25° C., a viscosity less than 1,000 poise, said isolate having up to about 2% polar lipid material on the surface thereof, and stitch injecting said brine into said meat.

4,164,590

LOW LIQUID VOLUME RETORT METHOD

Samuel A. Mencacci, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 751,923, Dec. 16, 1976. This application Apr. 17, 1978, Ser. No. 896,659
Int. Cl.[2] A23L *1/00, 3/10*; B65B *55/00*
U.S. Cl. 426—407 **8 Claims**



1. A method of cooking and cooling food product filled containers within a pressure vessel having a tunnel therein which is arranged to receive the containers and which includes an inlet end and an overflow port at its outlet end that is disposed above the level of the containers in the tunnel, said tunnel also including external surfaces including an upper surface, said method requiring a minimum of heat treatment liquid comprising the steps of: loading the containers into the tunnel, closing the pressure vessel, directing a heated liquid at cooking temperature into the inlet end of said tunnel for flow through said tunnel and discharge from said overflow port during a cooking cycle, collecting the heated liquid overflowing from said port in a shallow pool within the lower portion of the pressure vessel externally of the tunnel and near the lower portion of the tunnel, directing a gaseous medium at superatmospheric pressure into said vessel to raise the pressure therein to a superatmospheric pressure in a manner so as to apply the gaseous medium at superatmospheric pressure directly against the upper surfaces of said shallow pool and said tunnel and directly against the external surfaces of the tunnel between the level of said overflow port and the upper surface of said shallow pool during the cooking cycle, continuously reheating and recirculating the heated liquid through the tunnel during the cooking cycle to maintain the amount of heated liquid in the shallow pool at a minimum until the cooking cycle is completed, discharging the heated liquid from the shallow pool and from the tunnel at the completion of the cooking cycle, directing a cooling liquid into the tunnel to cool the containers to a temperature below the boiling point of the heated liquid at atmospheric pressure during a cooling cycle, and thereafter removing the processed containers from the pressure vessel.

4,164,591

METHOD OF HEATING A FOOD ARTICLE

David W. Ahlgren, Duluth; David A. Hassell, Coon Rapids, and Elvis S. Zimmer, Andover, all of Minn., assignors to Jeno F. Paulucci, Duluth, Minn.

Filed Apr. 2, 1976, Ser. No. 673,114
Int. Cl.[2] A21D *8/06*
U.S. Cl. 426—523 14 Claims

1. A method of cooking a food article having a layer of crust and a layer of topping upon the crust, the topping having a higher specific heat than the crust, comprising the steps of:

(a) placing the food article while in a refrigerated state into a heated oven with the crust facing downwardly;

(b) broiling the topping by advancing the food article through a broiling zone underneath a source of radiant heat applying radiant heat directly against the topping;

(c) transferring the food article from the broiling zone to a baking zone;

(d) baking the food article by advancing the food article through the baking zone while applying convective hot air heat to the food article and bringing the temperature of both topping and crust layers to an even and heated temperature;

(e) transferring the food article from a baking zone to a toasting zone;

(f) toasting the bottom of the crust by advancing the food article through the toasting zone over the top of a source of both convective and radiant heat applying convective hot air and radiant heat to the bottom of the crust for browning the crust in the toasting zone; and then

(g) automatically discharging the heated food article in a cooked and ready for consumption state, from the toasting zone and from the oven.

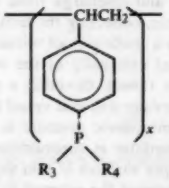
4,164,592

FRIED FOODS

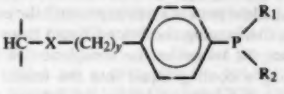
Bryan L. Madison, and Joel I. Shulman, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 13, 1977, Ser. No. 805,666
Int. Cl.[2] A23D *5/04;* A23L *3/34*
U.S. Cl. 426—547 6 Claims

1. A process for improving the flavor of fried foods containing fatty acids or esters thereof, comprising: frying said food in a fat or oil containing a safe an effective amount of a polymeric triarylphosphine compound having a molecular weight of about 600 to about 3000, wherein said polymeric triarylphosphine compound contains the moiety



wherein x is an integer of from 2 to about 15 and R_3 and R_4 are each phenyl; or the moiety



wherein X is selected from the group of oxygen, sulfur and nitrogen, R_1 and R_2 are each selected from the group of aryl and substituted aryl, and y is an integer from 1 to 4 said polymeric triarylphosphine serving to inhibit the build-up of hydroperoxides of fatty acids or esters thereof.

4,164,593

ANTI-CAKING DOUGH CONDITIONING COMPOSITION AND METHOD

Lawrence F. Marnett, Leawood, Kans., and Veryl D. Barry, Independence, Mo., assignors to C. J. Patterson Company, Kansas City, Mo.

Filed Apr. 1, 1977, Ser. No. 783,658
Int. Cl.[2] A21D *2/16*
U.S. Cl. 426—653 26 Claims

1. An anti-caking dough conditioning agent which consists essentially of from about 15% to about 90% by weight of the total of a sodium salt of the reaction product of stearic acid and lactic acid and from about 10% to about 85% by weight of the total of a calcium salt of the reaction product of stearic acid and lactic acid, said sodium and calcium salts having been commingled in a molten condition and thereafter cooled to a solid state.

4,164,594

LECITHIN BASED WETTING AGENT

William P. Jackson, Chatsworth, Calif., and Michael R. Warseck, Fairport, N.Y., assignors to Carnation Company, Los Angeles, Calif.

Filed May 25, 1977, Ser. No. 800,243
Int. Cl.[2] A23J *7/02;* A23C *9/16*
U.S. Cl. 426—662 5 Claims

1. A wetting agent which consists essentially of lecithin containing at least 95% acetone insoluble lecithin in an oil carrier having a maximum iodine value of 2.0, a bland taste and which is a liquid at temperatures ranging from room temperature to 0° C., the wetting agent containing from about 25% to 65% acetone insoluble lecithin.

4,164,595

PREMOISTENED FLUSHABLE WIPER

James W. Adams, Schofield, and Orville H. Reinke, Oshkosh, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 755,195, Dec. 29, 1976, Pat. No. 4,117,187.
This application Sep. 5, 1978, Ser. No. 939,288
Int. Cl.[2] B05D *3/10*
U.S. Cl. 427—341 11 Claims

1. A process for producing a premoistened wiper having high initial wet strength and lower wet strength when immersed in a substantially neutral or alkaline liquid to allow for flushability, comprising the steps of:

(a) forming a non-woven web of fibrous materials;

(b) forming a liquid binder solution consisting essentially of water and a salt of an acid insoluble-alkali soluble acidic polymer which is capable of bonding together the fibers of said web in acid liquid and is resistant in acid liquid to weakening of the bonding between the fibers;

(c) applying said liquid binder solution in a uniform distribution through said web;

(d) drying said web to substantially remove the water therefrom; and

(e) immersing said dried web in an acid liquid to bond together the fibrous material to said web with said acidic polymer.

4,164,596

METHOD FOR COATING SURFACES OF TOOLS WITH FIRE AND HEAT RESISTANT COMPOSITION

Frank X. Meister, 6307 N. Navajo, Chicago, Ill. 60645

Continuation-in-part of Ser. No. 743,855, Nov. 22, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,739
Int. Cl.[2] B05D *3/00, 3/02;* C04B *43/10*
U.S. Cl. 427—372 B 7 Claims

1. A method of coating a tool surface to render the tool fire and heat resistant, comprising the steps of

providing a tool having a surface utilized in connection with high heat and fire encountering applications,

providing a composition consisting essentially of from about 3 to about 8 parts by volume of Sagger's Clay, about 3 parts to about 8 parts by volume of a soluble alkali silicate, from about 3 parts to about 8 parts by volume of granular mica in a laminated silica mineral form, and from about ½ part to about 2 parts by volume of water,

applying said composition to the working surface of the tool which is intended for high heat and fire encountering application,

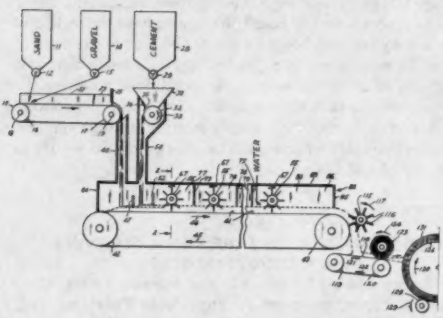
and allowing said composition to fully dry on the surface of the tool thereby to provide a heat and fire resistant coating encasing the working surface of the tool.

4,164,597

METHOD OF MIXING AND SPRAYING CONCRETE ONTO PIPE

Carl K. Smith, Mathis, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Continuation of Ser. No. 709,189, Jul. 27, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 846,699
Int. Cl.[2] B05D *1/02*
U.S. Cl. 427—425 19 Claims



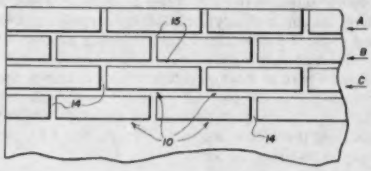
1. Method for mixing particulate materials together to form a uniform mixture thereof, comprising continuously depositing a first layer of uniform thickness of a first material onto a moving conveyor provided with parallel walls at its opposite sides to retain material layers of uniform thicknesses thereon, continuously depositing at least one subsequent layer of uniform thickness of other material onto said first layer moving on said moving conveyor, each said layer of a material being separately leveled on said moving conveyor to control the volume of material in the layer for each unit length of said conveyor and to evenly distribute the layer of material to extend uniformly across said conveyor between said walls before depositing of another layer of other material thereon and before mixing of said layers, and continuously mixing said first and other material layers while said materials are moved by said moving conveyor to form a uniform mixture of said materials.

4,164,598

VENEER WALL COVERING AND METHOD OF ASSEMBLY

William D. Wilhelm, St. Charles, Mo., assignor to Interior Brick Corporation, Maryland Heights, Mo.

Division of Ser. No. 781,759, Mar. 28, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,475
Int. Cl.[2] B32B *3/14, 3/16, 9/04;* E04C *1/00*
U.S. Cl. 428—48 3 Claims



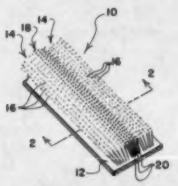
1. In a veneer wall covering of individual blocks for interior walls of a building to produce a three dimensional effect, the improvement comprising: a plurality of blocks of light weight paper backed gypsum adhesively applied to the existing surface of the interior wall and to project therefrom, said blocks being arranged in spaced relation to expose the surface of the existing wall in the spaces between said blocks; a layer of a plastic texturizing covering material applied over said blocks and in the spaces between said blocks to cover the block edges and the exposed surface of the existing wall to thereby simulate conventional mortar joints and a final finishing pigmented coat applied solely to the faces of said blocks whereby said blocks are made to stand out relative to said spaces between said blocks.

4,164,599

WEATHER STRIP AND METHOD OF ITS MANUFACTURE

Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512

Filed Jul. 25, 1977, Ser. No. 818,425
Int. Cl.[2] D04H *11/00*
U.S. Cl. 428—92 23 Claims



1. A weather strip, comprising:

(a) an elongate base strip;

(b) a first row, extending longitudinally along the base strip, of individual first fibers free to move relative to each other;

(c) a second row, extending longitudinally along the base strip, of second fibers bonded together to provide a windbreak;

(d) the first fibers exhibiting no significant measure of external adhesiveness in the presence of a selected application of energy;

(e) the second fibers exhibiting a significant measure of external adhesiveness in the presence of said selected application of energy; and,

(f) the second fibers being bonded together as the result of said selected application of energy.

4,164,600

THERMAL BONDING OF POLYESTER POLYBLENDS

Kai-Lim W. Yung; Bernard Silverman, both of Raleigh, and Virginia C. Menikheim, Chapel Hill, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,882
Int. Cl.[2] B05D *1/14;* B32B *7/14*
U.S. Cl. 428—198 12 Claims

1. A process for thermally bonding fibers comprising forming fibers from a melt blend comprising a polyester and a terpolymer selected from the class consisting of lactam-polyol-polyacyl lactam and acyl-polylactam terpolymers, said fibers having present a crystallization inhibiting amount of the said terpolymer, contacting the fibers with one another, heating the contacted fibers to a temperature which is below the bonding temperature of either the said polyester or the said terpolymer, resulting in a permanent bonding of the melt blended fibers as a fabric, and thereafter annealing the contacted fibers to at least partially crystallize the same.

4,164,601

COATING FOR FIBROUS CARBON MATERIAL IN BORON CONTAINING COMPOSITES

Robert C. Shaffer, Playa del Rey, Calif., assignor to Hitco, Irvine, Calif.

Division of Ser. No. 701,597, Jul. 1, 1976, Pat. No. 4,101,354. This application Apr. 24, 1978, Ser. No. 899,398
Int. Cl.[2] B32B *9/00*
U.S. Cl. 428—284 6 Claims

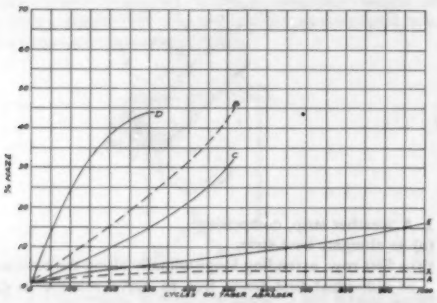
1. A carbon-carbon composite comprising a plurality of layers of fibrous material, the fibrous material being comprised of fibers of substantially carbon or graphite composition, and a resin binder of substantially carbon composition, the composite having an interlaminar tensile strength of not substantially less than 727 psi and a tensile strength in the directions of the fibers of not substantially less than 6800 psi.

4,164,602

ABRASION RESISTANT POLYVINYL ACETAL COATED ARTICLE

David A. Fabel, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 7, 1977, Ser. No. 840,344
Int. Cl.[2] B32B *27/36*
U.S. Cl. 428—334 7 Claims



1. A coated article comprising a substrate coated with a coating composition comprising a polyvinyl acetal resin and polysilicic acid in which the ratio by weight of polysilicic acid, calculated as SiO_2, to resin is from 2.0 to 4.0:1 and in which the resin comprises from 35 to 50 percent by weight of hydroxyl groups, calculated as polyvinyl alcohol.

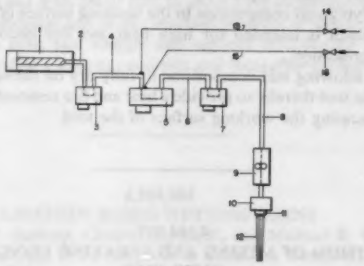
6. A glazing unit which comprises a sheet selected from polyethylene terephthalate, and acrylonitrile polymers containing 55–90 percent of acrylonitrile coated with a layer from 5 to 10 microns in thickness of a composition comprising a polyvinyl butyral resin and polysilicic acid wherein the ratio of polysilicic acid, calculated as SiO_2, to resin is from 2.5 to 3.5:1 and the polyvinyl butyral has from 35 to 45 percent by weight of hydroxyl groups, calculated as polyvinyl alcohol.

4,164,603

FILAMENTS AND FIBERS HAVING DISCONTINUOUS CAVITIES

Erhard Siggel, Lutzelbach; Gerhard Wick, Obernburg; Heinz Linhart, Erlenbach, and Erich Kessler, Hochst, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Nov. 4, 1976, Ser. No. 738,985
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550080
Int. Cl.[2] C08J *9/30;* B29D *27/00*
U.S. Cl. 428—398 19 Claims



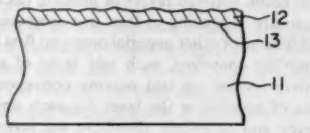
1. A process for the manufacture of filaments or fibers from a thermoplastic synthetic polymer having a plurality of adjacent, separate, discontinuous needle-shaped cavities of substantially uniform size which comprises melting the synthetic polymer, having the resulting melt with from 0.1% up to and including 1% by weight of a dimethylpolysiloxane having a viscosity of from 3–400 cP based on the weight of the melt, and 10% or less by volume, based on the gas volume of the melt, of a gas or its equivalent of a gas-forming substance which is substantially inert to the melt under conditions whereby the gas or gas-forming substance is dissolved or finely dispersed in the melt, and extruding the resulting mixture through spinnerets to form filaments wherein said cavities comprise 5–50% of the volume of said filaments.

4,164,604

LEADER OR TRAILER TAPE FOR A MAGNETIC RECORDING MEDIUM

Yasuo Tamai; Masaaki Fujiyama, and Hiroshi Amari, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 8, 1977, Ser. No. 831,498
Claims priority, application Japan, Sep. 13, 1976, 51-108895
Int. Cl.[2] B32B *27/36, 23/12, 31/28*
U.S. Cl. 428—409 16 Claims



1. A leader or trailer tape for a magnetic recording medium comprising a transparent non-magnetic flexible support film of a material from the group consisting of a polymeric cellulose esters, polystyrene, polyesters, polyolefins, polyvinyl resins, and polycarbonates, said film having a surface roughness of

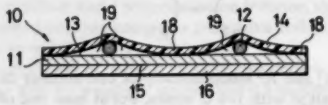
0.15–1.8 μm, and having deposited thereon by vapor deposition in vacuum or high frequency spattering a transparent electrically conductive coating of 10–400 Å thickness of an oxide of a metal from the group consisting of indium, gallium, thallium, tin, titanium, vanadium, chromium, molybdenum, tungsten and alloys thereof.

4,164,605

LAMINATED THERMAL INSULATION SHEETING

Yuuki Okawa, and Sumiharu Suzuki, both of Yokohama, Japan, assignors to Tokai Metals Co., Ltd., Japan

Filed Dec. 28, 1977, Ser. No. 865,203
Claims priority, application Japan, Nov. 7, 1977, 52/149234[U]
Int. Cl.[2] C04B *43/02*
U.S. Cl. 428—593 8 Claims



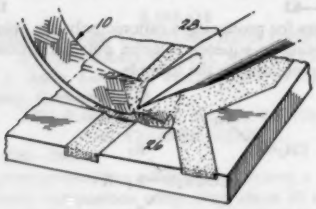
1. A laminated thermal insulation sheeting, comprising:
(a) an aluminum sheet;
(b) a metal wire network disposed on and over one surface of said aluminum sheet and having interstices therein; and
(c) a substantially transparent film of synthetic resin placed on said metal wire network and having portions bonded to said one surface of the aluminum sheet through said interstices in the metal wire network.

4,164,606

TINNED COPPER BRAIDS FOR SOLDER REMOVING

Ernst Spirig, Movenstrasse 37, CH-8640, Rapperswil, Switzerland

Filed Nov. 8, 1977, Ser. No. 849,616
Int. Cl.[2] B23K *1/00*
U.S. Cl. 428—605 12 Claims



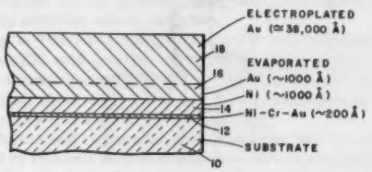
1. A device for removing a solder alloy from a solid soldered joint comprising a multiplicity of metallic strands formed into an elongated wick operable to effect said solder removal through the application of an end portion thereof to the joint in heat exchange relation to a heat source so that when the solder alloy is rendered molten by the heat source it will flow by capillary action from the joint into the applied end portion of the wick, the improvement which comprises each metallic strand of said wick having its exterior surface coated with solidified solder alloy having a melting point substantially below the melting point of tin prior to being formed into said wick so that when the end portion thereof is applied to said joint in heat exchange relation with the heat source as aforesaid the solid solder alloy of the coating on the strands of the applied end portion when rendered molten by the heat source mixes with the molten solder alloy from the joint flowing by capillary action into the applied end portion of the wick.

4,164,607

THIN FILM RESISTOR HAVING A THIN LAYER OF RESISTIVE METAL OF A NICKEL, CHROMIUM, GOLD ALLOY

Ronald A. Thiel, and Edward H. Maurer, both of San Diego, Calif., assignors to General Dynamics Corporation Electronics Division, San Diego, Calif.

Filed Apr. 4, 1977, Ser. No. 784,052
Int. Cl.[2] H01C *7/00, 7/02, 7/04*
U.S. Cl. 428—621 15 Claims



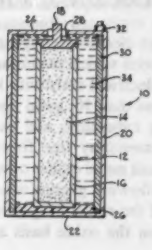
1. A thin film resistor comprising:
a substrate of insulating material defining a support surface, and
a thin layer of resistive metal comprising an alloy consisting of nickel, chromium, and gold of predetermined weight percentages wherein the percentage of gold is not greater than the combined percentage of nickel and chromium.

4,164,608

CATHODE, AND A CELL INCORPORATING SUCH A CATHODE

Johan Coetzer, Pretoria, South Africa, assignor to The South African Inventions Development Corporation, Pretoria, South Africa

Filed Mar. 6, 1978, Ser. No. 884,069
Claims priority, application South Africa, Mar. 9, 1977, 77/1433
Int. Cl.[2] H01M *10/44*
U.S. Cl. 429—50 39 Claims

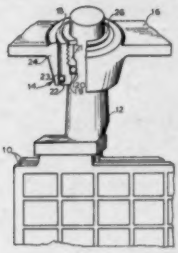


1. A cathode for a high temperature cell, the cathode comprising an electronegative element selected from the group consisting of sulphur and selenium, and a molecular sieve carrier comprising dehydrated zeolite crystals wherein the electronegative element is sorbed and wherein the electronegative element is held captive during use of the cathode in a cell.

4,164,609
BATTERY POST SEAL

Henry E. Jensen, Lafayette Hill, Pa., assignor to Eltra Corporation, Toledo, Ohio

Filed May 8, 1978, Ser. No. 904,074
Int. Cl.[2] H01M 2/06
U.S. Cl. 429—183 4 Claims



1. In an electric storage battery having a cover and a terminal post which extends upwardly through an aperture in the cover, an improved terminal post seal which permits upward movement of the terminal post through the aperture comprising a first stuffing box carried by the terminal post, a second stuffing box which is integral with the cover and receives said first stuffing box, a first O-ring seal disposed between the terminal post and said first stuffing box and a second O-ring seal disposed between said first and second stuffing boxes which permits relative movement between said stuffing boxes.

4,164,610
GLASSES EXHIBITING HIGH LITHIUM ION MOBILITY

George H. Beall, Big Flats, and Richard F. Reade, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 799,190, May 23, 1977, abandoned. This application May 8, 1978, Ser. No. 903,553
Int. Cl.[2] C03C 3/14, 3/18; H01M 6/18
U.S. Cl. 429—193 1 Claim

1. Solid membrane electrolyte-separators for use in liquid lithium - sulfur batteries which membranes are glass compositions exhibiting an electrical resistivity in terms of log ρ measured at 25° C. of less than 10, good chemical durability, low temperature melting capability, and excellent glass stability, said glasses being essentially free from silica, alkaline earth metal oxides, and alkali metal oxides other than Li_2O and being selected from the following groups wherein the compositions consist essentially of the stated proportions expressed in terms of weight percent on the oxide basis as calculated from the batch of:

(a) 0–9.1% Li_2O, 14.4–27.1% LiF, 18–29.5% Li_2O+LiF, 0–12.7% LiCl, and 69.3–77.3% B_2O_3; and

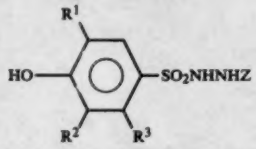
(b) 0–26.0% Li_2O, 0–16.9% LiF, 0–13.9% LiCl, 17.2–36.3% Li_2O+LiF+LiCl, 0–18.6% Al_2O_3, but <10% Al_2O_3 when F and/or Cl are absent and Li_2O is no more than 20%, 0–14.8% AlF_3, 6.2–18.6% Al_2O_3+AlF_3, and 54.3–74.1% B_2O_3.

4,164,611
AROMATIC SULFONYL HYDRAZIDES AND SEMICARBAZIDES AS CHEMICAL BLOWING AGENTS

Andreas Schmidt; Hugo Illy, both of Reinach; Rudolf Kirchmayr, Aesch, all of Switzerland, and André Schmitter, Hégenheim, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 9, 1976, Ser. No. 703,878
Claims priority, application Switzerland, Jul. 10, 1075, 9024/75
Int. Cl.[2] C07C 133/02, 143/825; C08J 9/10
U.S. Cl. 521—89 18 Claims

1. A compound of the formula I



in which R^1 and R^2 independently of one another denote hydrogen or alkyl with 1–4 C atoms, but at least one of the two substituents denotes alkyl, R^3 denotes hydrogen or alkyl with 1–4 C atoms and Z denotes hydrogen or $—CONH_2$.

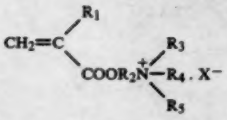
8. In a process for foaming a plastic with a foaming agent, the improvement wherein said foaming agent, which at the same time functions as a stabilizer against the thermo-oxidative degradation of the plastic, is the compound of claim 1.

4,164,612
PROCESS FOR PRODUCING WATER-SOLUBLE CATIONIC POLYMERS

Naoyuki Suzuki; Yoji Wada, and Akihisa Furuno, all of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Oct. 31, 1977, Ser. No. 847,025
Claims priority, application Japan, Nov. 4, 1976, 51-131686
Int. Cl.[2] C08F 2/00, 2/10, 18/22, 12(06
U.S. Cl. 526—62 10 Claims

1. A process for producing a cationic polymer, which comprises subjecting to aqueous solution polymerization a vinyl monomer represented by the formula,



(I)

wherein R_1 represents —H or $—CH_3$; R_2 represents $—CH_2CH_2—$ or $—CH_2CH(OH)CH_2—$; R_3 and R_4 represent $—CH_3$ or $—CH_2CH_3$; R_5 represents $—C_nH_{2n+1}$ in which n is an integer from 0 to 4, $—CH_2C_6H_5$ or $—CH_2COOH$; and X^- represents Cl^-, $CH_3SO_4^-$, $CH_3SO_3^-$ or $\frac{1}{2}SO_4^{--}$, either alone or in admixture with up to 25% by weight, based on the total weight of the monomers, of other polymerizable vinyl monomers by use of a polymerization initiator in the presence of 7 to 18% by weight, based on the total weight of the monomer and water, of water and about 10 to about 40% by weight, based on the total weight of the polymerization system, of a powdery water-soluble salt selected from the group consisting of alkali metal salts, alkaline earth metal salts and ammonium salts which is dispersed in the polymerization system, in the absence of other media, thereby obtaining the water-soluble cationic polymer in the form of a solid mass.

4,164,613

MANUFACTURE OF POLYMERS IN BEAD FORM FROM WATER-SOLUBLE, ETHYLENICALLY UNSATURATED MONOMERS

Richard Hoene, Heidelberg; Dietmar Jung, Ludwigshafen; Hans-Uwe Schenck, Wachenheim, and Herbert Spoor, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,254

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710372

Int. Cl.[2] C08F *2/16, 2/32*

U.S. Cl. 526—201 3 Claims

1. In a process for the production of polymers, in bead form, of water-soluble ethylenically unsaturated monomers by forming a water-in-oil suspension of an aqueous solution containing at least one water-soluble ethylenically unsaturated monomer in an inert hydrophobic liquid organic dispersion medium and polymerizing the suspended monomer in the presence of a protective colloid and a polymerization initiator, the improvement which comprises using as a protective colloid a polymer obtained by polymerizing a mixture of

(A) 60 to 99.9% by weight of dicyclopentadiene, and

(B) 0 to 30% by weight of styrene and 0.1 to 10% by weight of maleic anhydride, said protective colloid polymer being soluble in the inert hydrophobic liquid organic dispersion medium, said protective colloid polymer further having a number-average molecular weight of from 400 to 5,000 and an iodine number of from 30 to 200.

2. In a process for the production of polymers, in bead form, of water-soluble ethylenically unsaturated monomers by forming a water-in-oil suspension of an aqueous solution containing at least one water-soluble ethylenically unsaturated monomer in an inert hydrophobic liquid organic dispersion medium and polymerizing the suspended monomer in the presence of a protective colloid and a polymerization initiator, the improvement which comprises using as a protective colloid a homopolymer of dicyclopentadiene, said protective colloid polymer being soluble in the inert hydrophobic liquid organic dispersion medium, said protective colloid polymer further having a number-average molecular weight of from 400 to 5,000 and an iodine number of from 30 to 200.

4,164,614

TERPOLYMER COMPOSITIONS USEFUL AS PRESSURE-SENSITIVE ADHESIVES

William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 21, 1978, Ser. No. 917,778

Int. Cl.[2] C08F *212/08*

U.S. Cl. 526—264 8 Claims

1. A pressure-sensitive adhesive comprising a polymerized terpolymeric composition comprising about 80 to 60 weight percent 2-ethylhexyl acrylate, about 25 to 15 weight percent N-vinyl-2-pyrrolidinone, and about 15 to 5 weight percent styrene and having a melt viscosity of about 25,000 to 200,000 and has good peel adhesion and shear adhesion.

4,164,615

CONVERSION OF CONJUGATED DIENES TO DIACYLOXY OLEFINS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 25, 1977, Ser. No. 827,632

Int. Cl.[2] C07C *67/05*

U.S. Cl. 560—246 28 Claims

1. A process for the production of diacyloxy olefins from conjugated diolefins which comprises:

reacting at least one conjugated diolefin with oxygen and a carboxylic acid reactant media employing a catalyst system consisting essentially of (A) a titanium compound, (B) an alkali metal compound, and (C) a halide-source, and optionally (D) a dihalobutene adjuvant;

and wherein said conjugated diolefin is selected from substituted or unsubstituted diolefins, and where substituted the substituents thereof are selected from halogen, cyano, —COOR′, or hydrocarbyl, where R′ is hydrogen, alkyl, or aryl;

wherein said carboxylic acid reactant media is selected from the group consisting of aliphatic and aromatic mono- and dicarboxylic acids and mixtures thereof with acid anhydrides, of 2 to 18 carbon atoms per molecule;

said (A) titanium compound is a hydrocarbyl titanium compound, hydrocarbyl titanium halide, titanium halide, or mixture;

said (B) alkali metal compound is at least one halide, nitrate, carboxylate, oxide, or hydroxide of lithium, sodium, potassium, rubidium, or cesium;

and said (C) halide-source is a said (A) or (B) where said (A) or (B) is the halide, or alkaline earth metal halide, or mixture, wherein the halide is chloride, bromide, iodide, or mixture.

4,164,616

PRODUCTION OF DIHYDROXY ALKANE

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1978, Ser. No. 870,157

Int. Cl.[2] C07C *31/20*

U.S. Cl. 568—858 5 Claims

1. The production of an alkanediol which comprises bringing together in a reaction zone in vapor phase a conjugated diene and a halogen selected from chlorine and bromine, then immediately reacting in said reaction zone the reaction product thus obtained with a liquid mixture of an alkali metal acetate and an organic acid solvent under conditions to form a 1,4-diacetoxyalkene, hydrogenating said 1,4-diacetoxyalkene to the corresponding alkane and hydrolyzing said alkane to the corresponding 1,4-alkanediol; the vapor phase reaction being effected above the liquid level of said mixture of said acetate and said acid in said reaction zone.

4,164,617

LONG WATERTIGHT CABLE AND SLEEVE JOINT

Jacobus P. I. Van Kesteren, Leidschendam, Netherlands, assignor to N.K.F. Groep B.V., Netherlands

Filed May 9, 1978, Ser. No. 904,201

Claims priority, application Netherlands, May 27, 1977, 7705840

Int. Cl.[2] H01B 7/28

U.S. Cl. 174—23 C 9 Claims

1. In a method of manufacturing a longitudinally watertight cable or cable joint comprising a number of conductors situated within an outer sheath, in which a liquid or semi-solid sealing mixture comprising a vulcanizable silicone rubber and a diluent is provided in the space between the conductors mutually and between the conductors and the outer sheath, which mixture, after vulcanization of the silicone rubber, constitutes a watertight seal, the improvement wherein a cycloalkyl benzene is used as a diluent the cyclo alkyl group of which contains 8–15 carbon atoms and the benzene group of which may be fully or partly chlorinated.

9. A long watertight cable or cable joint obtained by the method of claim 1.

4,164,618

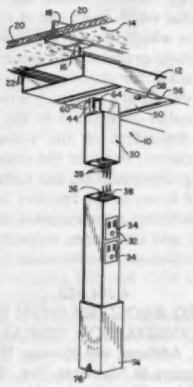
PLUG-IN SERVICE POLE ASSEMBLY

Salvatore J. Casasanta, Farmington, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Filed Jun. 15, 1977, Ser. No. 806,766

Int. Cl.[2] H02G 3/04

U.S. Cl. 174—48 4 Claims



1. In a service pole assembly for distributing electrical power to a room from an overhead raceway and including a hollow elongated pole having outlet receptacles and internal wiring connected thereto, an improvement comprising an adaptor plug means on top of the pole having raceway receptacle plug-in blades connected to the internal wiring, the adaptor plug means including a supporting clamp fixed to the top of the pole and a plug-in blade mounting adaptor cap having an insulating body releasably assembled in snap-fitting relation to the clamp, the clamp having an upwardly extending spring finger and offset locking jaw movable into releasable locking engagement with the overhead raceway upon being inserted therein to resist a force tending to detach the plug-in connection.

4,164,619

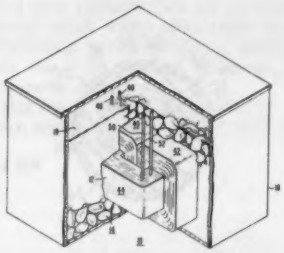
POROUS ENCAPSULATING COMPOSITION FOR ELECTRICAL APPARATUS

Gerhard R. Sprengling, Derry Township, Westmorland County, and Louis A. Cargnel, Unity Township, Westmorland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1978, Ser. No. 870,896

Int. Cl.[2] H01F 27/22

U.S. Cl. 174—52 PE 5 Claims



1. Electrical apparatus comprising:

a case;

an electrical member disposed within said case; and

a cured, porous composition in said case surrounding said electrical member, said composition being formed of at least one particulate filler material and a cured binder material;

the particles of said at least one particulate filler which are adjacent to said electrical member and to said case having points of direct contact therewith, and the particles of said at least one particulate filler which are contiguous having points of direct contact, providing multiple heat transfer paths devoid of said cured binder material, from said electrical member to said case through the at least one particulate filler material;

said cured binder material forming beads around said points of direct contact to provide a high strength cohesive assembly, notwithstanding the multiple heat transfer paths which are devoid of said cured binder material.

4,164,620

INSULATIVE CORONA DISCHARGE SUPPRESSING SHEATH FOR HIGH VOLTAGE CABLE SPLICES

Harold C. Hervig, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

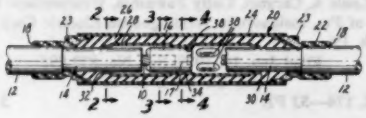
Filed Sep. 7, 1978, Ser. No. 940,356

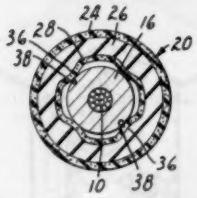
Int. Cl.[2] H02G 15/08

U.S. Cl. 174—73 R 2 Claims

1. An insulative corona discharge suppressing shield for positioning over and along a splice in a high voltage cable of generally circular cross section having semiconductive covering, insulating covering and inner conductor and having an electrical connector electrically joining two bare ends of said conductor, said shield comprising two end caps of generally elongated tubular form having outer and inner ends and having outer termination segments of uniform internal and external diameter and inner enlarged segments having variable external diameter and internal diameter varying from being equal to the internal diameter of said terminal segment to being greater than the external diameter of said terminal segment, said end caps being adapted to engage said semiconductive covering electrically, annular inner and outer semiconductive sections and an insulative section having inwardly directed bosses over at least a portion thereof extending inward, said insulative section being integrally bonded at least to said inner semiconductive section and said end caps, said inner semiconductive

section having a wall of substantially uniform thickness and further being urged inwardly by said bosses into electrical





contact with said electrical connector when said shield is positioned on a high voltage cable splice.

4,164,621

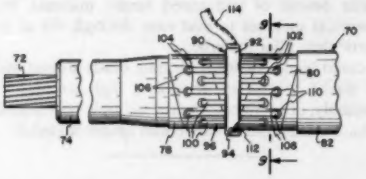
CABLE SHIELD CONNECTING DEVICE

Frank A. Silva, Basking Ridge, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,947

Int. Cl.[2] H01R 5/00

U.S. Cl. 174—78 **16 Claims**



1. A connecting device in combination with a high voltage power cable of the type having an inner conductor, insulation surrounding the conductor, and a shielding system including a metallic shield with a layer of overlying wire strands thereon surrounding the insulation, said connecting device comprising:

(a) an electrically conductive bar circumferentially around a portion of the shielding system in a manner to establish a radial gap between the portion of the shielding system and the bar, the gap being of a size to permit the wire strands to extend therethrough such that the wire strands are enabled to be bent back over an external surface of the bar for electrical connection thereto; and

(b) a plurality of electrically conductive fingers, all circumferentially spaced and projecting from the bar in a manner to allow the fingers to extend axially along the shielding system when the bar is placed circumferentially thereabout, a first set of the plurality of fingers being of a first axial length and a second set of the plurality of fingers being of a second different axial length, each finger having a portion located remote from the bar and being attached to the shielding system, and each space between the fingers being of a size to allow different ones of the wire strands which extend through the gap to pass between adjacent fingers and be bent back over an external surface of the bar for electrical connection to the bar.

4,164,622

GRAPHICAL INPUT APPARATUS FOR ELECTRICAL EQUIPMENT

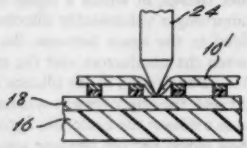
Peter J. Pobgee, Surbiton, England, assignor to National Research Development Corporation, London, England

Filed Mar. 8, 1978, Ser. No. 884,549

Claims priority, application United Kingdom, Mar. 9, 1977, 09945/77

Int. Cl.[2] G08C 21/00

U.S. Cl. 178—18 **5 Claims**



1. Apparatus for obtaining signals representative of the co-ordinates of a point indicated in a working area, including a sheet of electrically conductive or resistive material held in position across the surface of a fixed member, the said surface comprising a plurality of parallel conductors spaced apart from each other and supported on a resistive layer by means of insulating supports, resistive means for so connecting with the parallel conductors that when a current is passed between two terminals of the resistive means a voltage gradient is set up from conductor to conductor in the direction at right angles to the conductors, the sheet being held in position adjacent to the said surface, and the sheet being of such material and/or so mounted that when pressed towards the surface by means indicating the position of a point it bridges any of the parallel conductors in the locality of the point to the resistive layer, changeover means for causing current supplied to the apparatus to flow alternately in two paths, a first path in which the current flowing in the resistive means sets up a voltage gradient across the parallel conductors and at right angles thereto, and a second path in which the current flowing in the resistive layer sets up a voltage gradient in a direction parallel to the conductors, and means for deriving first and second signals when the sheet is pressed at a relatively small area to bridge at least one of the parallel conductors to the resistive layer, the first signal being dependent on the voltage of the parallel conductors when current flows in the resistive layer, and the second signal being dependent on the voltage of the resistive layer when current flows in the resistive means, and the first and second signals being representative of first and second co-ordinates of the said small area, respectively.

4,164,623

AM STEREO RECEIVER WITH IMPROVED CORRECTION SIGNALS

Francis H. Hilbert, Addison, and Norman W. Parker, Wheaton, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 17, 1977, Ser. No. 852,272

Int. Cl.[2] H04H 5/00

U.S. Cl. 179—1 GS **7 Claims**

1. An AM receiver for receiving compatible stereo signals and requiring dynamic correction for restoring the stereo information, comprising in combination:

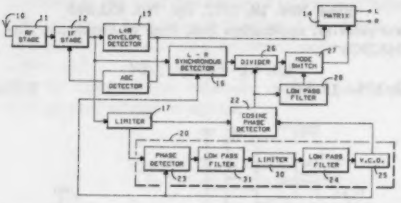
input means for receiving the stereo signals and translating the carrier frequency to an intermediate frequency;

correction factor circuitry coupled to the input means and including;

first limiter means coupled to the input means for removing amplitude modulation from the received signal;

phase locked loop means coupled to the limiter means for deriving from the amplitude limited signal a frequency reference signal related to the carrier frequency, the phase locked loop means including a local oscillator;

and first phase detector circuitry coupled to the outputs of the first limiter circuitry and of the phase locked loop means for providing a stereo correction factor signal representative of the phase difference therebetween; and



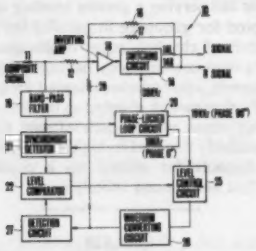
circuitry coupled to the phase locked loop means for preventing a false control voltage from being applied to the local oscillator.

4,164,624

DEMODULATION CIRCUITS OF FM STEREOPHONIC RECEIVERS

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 19, 1977, Ser. No. 861,606
Claims priority, application Japan, Dec. 20, 1976, 51-153260
Int. Cl.[2] H04H *5/00*
U.S. Cl. 179—1 GD **7 Claims**



1. A demodulation circuit of an FM stereo receiver comprising:

an inverting amplifier for inverting an FM stereo composite signal;

a switching circuit connected to the output of said inverting amplifier for producing left and right signals on left and right output terminals;

negative feedback circuit means connected between the input of said inverting amplifier and said left and right output terminals respectively;

a phase-locked loop circuit for controlling said switching circuit, said phase-locked loop circuit including means for generating a switching signal and a rectangular wave signal in response to a pilot signal contained in said composite signal, said rectangular wave signal having the same frequency as said pilot signal;

a waveform converting circuit for converting said rectangular wave signal into a sine wave signal which is equal in frequency and opposite in phase with respect to said pilot signal;

a control circuit having a control input for controlling the amplitude of said sine wave signal in accordance with a signal at said control input;

a first detection circuit for generating a first direct current signal proportional to the amplitude of said amplitude-controlled sine wave signal;

a second detection circuit for synchronously detecting said pilot signal in accordance with said rectangular wave signal and for generating a second direct current signal;

a comparator for comparing the levels of said first and second direct current signals to generate a comparison signal supplied to said control input of said control circuit; and

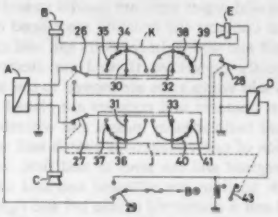
means for supplying said amplitude-controlled sine wave signal to the input of said inverting amplifier thereby cancelling the pilot signal in said composite signal.

4,164,625

A/C CIRCUIT FOR COMBINING AN AUTOMOBILE RADIO SPEAKER WITH SPEAKERS OF AN AUTOMOBILE STEREOPHONIC SYSTEM

Harutoshi Igeta, No. 17-24, 3-chome, Kirennishi, Hirano-ku, Osaka-shi, Osaka-fu, Japan

Filed Jan. 6, 1978, Ser. No. 867,379
Claims priority, application Japan, Feb. 7, 1977, 52-13970
Int. Cl.[2] H04R *5/04*
U.S. Cl. 179—1 SW **1 Claim**



1. Apparatus for selectively combining the speaker means of a car radio with the left and right speaker means of a car stereo amplifier, said apparatus comprising:

a changeover switch connected to a power source, to said car radio, and to said car stereo amplifier for selectively connecting in a first position said car stereo amplifier to said power source and in a second position said car radio to said power source;

a changeover relay having a coil portion connected for energization by said power source in said second position of said changeover switch, said relay having first, second and third double-throw switch portions, wherein the arms of said switches are mechanically interconnected for mutual actuation when said coil portion is energized;

a first output damping circuit including first and second ganged rotary switches each having wiper arms and a number of contacts, the wiper arms of said first and second rotary switches being connected to the arm of said second switch portion of said relay, the central contact of said first rotary switch being connected to an input of said left speaker means, the contacts to a first side of said central contact being interconnected by resistors and the contacts to the other side being connected together, the central contact of said second rotary switch being connected to an input of said car radio speaker means, the contacts to said first side of said central contact being connected together and the contacts to the other side of the central contact being interconnected by resistors;

a second output damping circuit including first and second ganged rotary switches each having wiper arms and a number of contacts, the wiper arms of said first and second rotary switches being connected to the arm of said third switch portion of said changeover relay, the central contact of said first of said rotary switches being connected to one input of said right speaker means, the contacts on a first side of said central contact being interconnected by resistors and the contacts on the other side of said central contact being connected together, the central contact of said second rotary switch being connected to the normally closed contact of said first switch

portion of said changeover relay, the contacts on said first side of said central contact being connected together and the contacts on the other side of said central contact being interconnected with resistors;

said car stereo amplifier having a left channel output connected to the normally closed contact of said second switch portion of said relay, a right channel output connected to the normally closed contact of said third switch portion of said relay, and a common output connected to said left and right speaker means;

said car radio amplifier having a first output lead connected to the normally open contact of said first switch portion of said relay and a second output lead connected to both normally open contacts of said second and third switch portions of said relay; and

said car radio speaker means having an input connected to the arm of said first switch portion of said relay, whereby in said first position of said changeover switch said car stereo amplifier is energized and is connected to said left and right speaker means and to said car radio speaker means through said first and second damping circuits such that as said wiper arms are moved to said first side of said central contacts the resistors are placed in the circuits of said left and said right speakers and said car radio speaker is directly connected to said car stereo amplifier, and when said wiper arms are moved to the other side of said central contacts said resistors are placed in the circuit of said car radio speaker means, and whereby in said second position of said changeover switch said relay coil portion is energized and the arms of said first, second, and third switch portions are actuated and said car radio is energized and is connected to said left and right speaker means and to said car radio speaker through said first and second damping circuits.

4,164,626

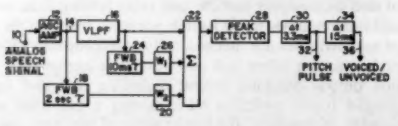
PITCH DETECTOR AND METHOD THEREOF

Bruce A. Fette, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 5, 1978, Ser. No. 903,264

Int. Cl.[2] G10L *1/00*

U.S. Cl. 179—1 SC **26 Claims**



1. A pitch detector for extracting pitch information from an audio signal comprising:

(a) low pass filter means coupled to receive the audio signal and for attenuating speech components in the audio signal generally higher than human pitch frequencies for producing a filtered audio signal; and

(b) DC shifting means coupled to said low pass filter means and to receive the audio signal for causing the pitch peaks of said filtered audio signal to be above a reference voltage such that crossovers of said reference voltage occur substantially at a rate of twice the pitch frequency.

11. A pitch detector comprising:

(a) input amplitude adjustment means for receiving an audio signal and for producing a regulated audio signal having a constant average power; and

(b) variable cutoff frequency low pass filter means coupled to said input amplitude adjustment means for extracting low frequency components of said audio signal which provide a fraction of said constant average power of said regulated audio signal, said low frequency components being substantially comprised of the pitch signal of said audio signal.

4,164,627

TIME DIVISION SWITCHING NETWORK USING TIME SLOT INTERCHANGERS

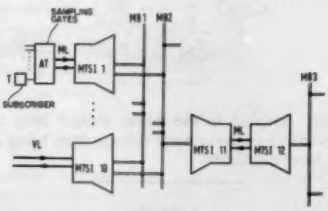
Manfred Langenbach-Belz, Stuttgart; Kurt Strunk, Sachsenheim, both of Fed. Rep. of Germany, and Marcel Vervloet, Berchem, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 18, 1977, Ser. No. 852,843

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1976, 2652920

Int. Cl.[2] H04Q *11/04*

U.S. Cl. 179—15 AQ **7 Claims**



1. A multiple stage switching network for time-division telecommunications switching, comprising a plurality of identical time slot interchanger switches, each of said switches including buffer stores for the temporary storing of time sot addresses and data to permit connections to be set up via a plurality of time-mulitplex-division highways in which a connection may include different channels in each highway, each of said interchanger switches including means for coupling from one end serving a smaller number of time-division channels to its other end serving a greater number of channels, said switches adapted for grouping in parallel between highways having a number of channels equal to the smaller number of channels and a common highway having at least said greater number of channels, said switches adapted for connection with the one end of a first switch coupled to the like end of a second switch and the other end of each of said first and second switches respectively coupled to highways having an identical number of channels for setting up a connection serially through said first and second switches.

4,164,628

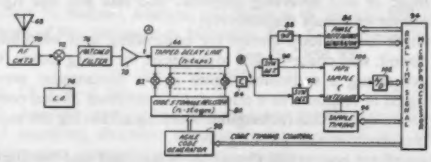
PROCESSOR FOR MULTIPLE, CONTINUOUS, SPREAD SPECTRUM SIGNALS

Charles R. Ward, Passaic, and Robert A. Reilly, North Caldwell, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 803,830, Jun. 6, 1977, abandoned. This application Mar. 17, 1978, Ser. No. 887,708

Int. Cl.[2] H04J *13/00*

U.S. Cl. 179—15 BA **4 Claims**



1. An apparatus for decoding N spread spectrum pseudo randomly coded signals in the form of a single composite CW signal to form a plurality of pulses each containing all the information in one of said N signal, comprising:

means for adjusting the bandwidth of said composite signal to a predetermined bandwidth;

a tapped delay line for serially receiving said CW signal of said predetermined bandwidth;

means for storing a pseudo random reference code corre-

sponding to a preselected code segment of one of said N spread spectrum signals;

comparison means for detecting correlation between said reference code and said one of said N signals;

means for generating a pulse containing all the information in a segment of one of said N signals, said segment corresponding to the total delay time of said tapped delay line, the position of said pulse indicative of the degree of synchronization between said reference code and said first signal; and

means for changing said reference code to one associated with another of said N signals;

4,164,629

TIME BASE FOR SYNCHRONOUS GENERATION OF FRAME AND CLOCK PULSES

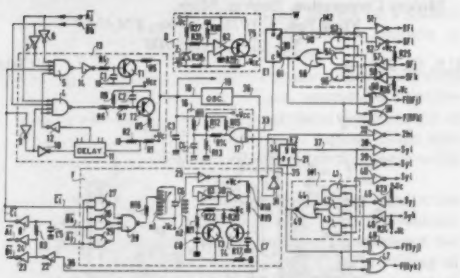
Yves Ollivier, Perros Guirec, and Michel Jacob, Lannion, both of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed May 5, 1978, Ser. No. 903,334

Claims priority, application France, May 10, 1977, 77 14184

Int. Cl.[2] H04J *3/06*

U.S. Cl. 179—15 BS **6 Claims**



1. A time base for generating clock pulses and frame synchronizing pulses, said time base comprising three identical generators each of which includes a base oscillator for generating a basic signal proper to the generator and a phase comparator means for applying the basic signals of all three base oscillators to a phase comparator in each generator, said phase comparators being arranged to apply a frequency control signal to their respective oscillators to generate their basic signals in synchronism with each other, each of the generators further including a clock signal generating circuit comprising a majority circuit connected to receive all three basic signals and driving a filter circuit tuned to the clock pulse frequency, the output of the filter circuit being delivered via an amplifier to provide the clock pulses with a pulse waveform and the clock signal generating circuit including a differential amplifier responsive to the marks and the spaces of the clock pulse waveform to bias the output of the filter to achieve a desired mark/space ratio, each of the generators also including means for generating and synchronizing the frame synchronizing pulses, said generating and synchronizing means comprising an internal-frequency divider connected to receive the clock pulses and to produce the frame synchronizing pulses therefrom, a first frame synchronizing majority circuit connected to receive frame synchronizing pulses from all three generators to derive a reset signal for the internal-frequency divider, and a feedback circuit for modifying the frequency control of the base oscillator in response to the synchronization of the frame synchronizing signals.

4,164,630

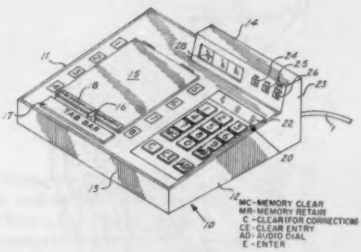
COMBINED TELEPHONE INDEX AND KEYBOARD FOR DIALER

Robert M. Brodbeck, P.O. Box 806, Littleton, Colo. 80120

Filed Nov. 14, 1977, Ser. No. 851,149

Int. Cl.[2] H04M *1/51*

U.S. Cl. 179—90 B **1 Claim**



1. Telephone index and combined switch arrangement for memory stored dialing data for automatic dialing telephones comprising:

(a) a housing having an entry keyboard switch means thereon for entering numbers to be stored and display means for displaying the number entered by said entry keyboard,

(b) multiple card index means for a visual listing of names and telephone numbers, each card including individual lines for individual numbers arranged in the same position on the cards, wherein said card and lines are divided into a plurality of left-hand lines and a plurality of right-hand lines, said left-hand and right-hand lines being substantially equal in number, and further including a cover positioned over said cards and finding means on said cover for positioning an individual card for visual display of the card's content;

(c) card switch means including an individual contract associated with each card index and activated by positioning said finding means to display the particular card to thereby close said card switch means completing a circuit for said card including a common lead and a common bus bar associated with said finding means and an individual lead for each card, said card switch means being initially energized when said cover is closed;

(d) selector switch means including a left-hand and a right-hand series of push buttons with one button in said left-hand series for and adjacent to each of said left-hand lines and one button in said right-hand series for and adjacent to each of said right-hand lines so that said selector switch means is activated by a push button to close a circuit for a particular line positioned on an individual card to thereby complete a first circuit associated with the card contained data and close a second circuit associated with a particular line on a card to retrieve and automatically dial a telephone number stored at a location in the memory associated with said particular line; and

(e) a visual display panel means on said housing adjacent said cover for displaying the number dialed by actuating said card switch and selector switch.

4,164,631

HORN LOUDSPEAKER WITH ACOUSTIC LENS

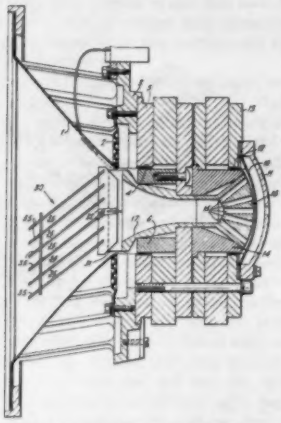
Alex V. Garner, High Wycombe, and Graham Townsend, Chinnor, both of England, assignors to Tannoy Products Limited, Buckinghamshire, England

Filed May 3, 1978, Ser. No. 902,519

Claims priority, application United Kingdom, May 6, 1977, 19135/77

Int. Cl.[2] H04R *1/20, 9/06*

U.S. Cl. 179—115.5 H 5 Claims



1. In a moving coil loudspeaker of the type including a pair of co-axial speech coils, one of which drives a high frequency diaphragm at the rear of the loudspeaker to provide an output along a horn and the other of which drives a cone forming a continuation of the horn and reproducing the lower frequencies, the improvement which comprises an acoustic lens fitted in the region where the horn contour is taken over by said cone, said lens having an external surface shaped so as to conform snugly with the contour of said cone and being effective to increase the divergence of the beam of acoustic radiation from said horn in the operative plane of said lens.

4,164,632

SIGNALLING SYSTEM FOR OVERVOLTAGE PROTECTORS

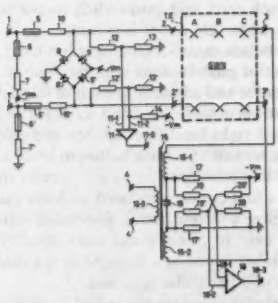
Einar A. Aagaard, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,775

Claims priority, application Netherlands, Dec. 17, 1976, 7614000

Int. Cl.[2] H04B *3/46*

U.S. Cl. 179—175.3 R 3 Claims



1. A signalling system for a telephone device comprising a central battery, telephone lines of a subscriber loop, rest supply resistors connected in series with said battery and connected to said telephone lines, over-voltage protection means connected in series with the battery and rest supply resistors for providing an open circuit in response to over-voltage conditions, a supply bridge means for selectively providing an alternate connection between said central battery and said telephone lines, sensing means for providing a loop detection signal in response to a closed-loop condition of said subscriber loop and for providing a bridge signal in response to said alternate connection only if said subscriber loop is in the closed-loop condition, said sensing means further providing said loop detection signal in response to an open circuit of said voltage protection means, and switching network means for initiating the alternate connection in response to said loop detection signal and for removing said alternate connection if said alternate connection is initiated and said bridge signal is not provided, said switching means maintaining said alternate connection in response to a bridge signal following said loop detection signal, whereby in response to the open circuit of the over-voltage protection means said sensing means alternately provides and removes said loop detection signal thereby signalling the open circuit condition of said over-voltage protection means.

4,164,633

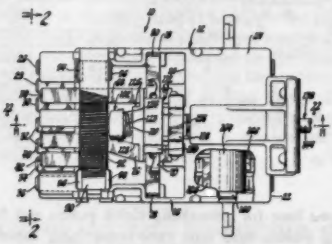
PUSH-PULL ROTARY SYSTEM

John J. Sheridan, Middletown; Willard E. Graddy, and Willis H. Anderson, both of Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 2, 1978, Ser. No. 874,490

Int. Cl.[2] H01H *9/00*

U.S. Cl. 200—4 7 Claims



1. A push-pull rotary switch for controlling a plurality of lighting circuits on a motor vehicle that includes a rotatable actuator rod longitudinally movable for moving a first switch means for controlling a first lighting circuit and a second switch means operated when said rod is rotated to a predetermined position irrespective of the longitudinal position of the rod for controlling a second lighting circuit, the improvement wherein said first and second switch means are mounted in a housing and said first switch means comprises a socket member made of insulating material and connected to said rod between the ends thereof by a ball and socket connection, a detent engaging said socket member for providing at least two distinct positions of said socket member, a cylindrical contactor fixed with said socket member, said socket member having portions integrally formed therewith connected to said housing for supporting the socket member for rotation about an axis substantially perpendicular to the longitudinal axis of the rod upon longitudinal movement of the latter for causing said cylindrical contactor to selectively connect a first pair of terminals and thereby provide said first lighting circuit, said second switch means including a rotor member and a contact bar member, said rotor member being connected to one end of said rod and being rotatable thereby, said rotor member having a radially extending tab formed therewith for depressing said contact bar member when said rod is at said predetermined

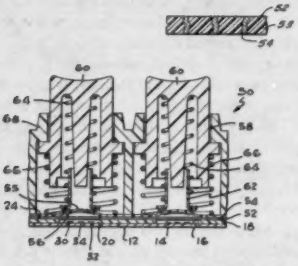
position so as to close said second lighting circuit by connecting a second pair of terminals.

4,164,634

KEYBOARD SWITCH ASSEMBLY WITH MULTIPLE ISOLATED ELECTRICAL ENGAGEMENT REGIONS

Michael N. Gilano, Newport Beach, Calif., assignor to Telaris Telecommunications, Inc., Irvine, Calif.

Filed Jun. 10, 1977, Ser. No. 805,346
Int. Cl.[2] H01H 13/70
U.S. Cl. 200—5 A 10 Claims



1. A switch assembly comprising:

a substrate having a conductive circuit pattern on a surface thereof, the circuit pattern defining switch contacts at switch contact regions of the substrate;

a generally planar, non-conductive spacer disposed adjacent the surface of the substrate in fixed, nonmoving relationship thereto, the spacer having apertures therethrough at locations opposite the switch contact regions of the substrate to provide communication through the spacer to the switch contacts;

a generally planar layer of resilient, multiple conductive contact material having a plurality of electrically isolated conductors extending between planar surfaces thereof, the layer having a resiliency in the plane thereof providing all of the return bias force tending to maintain the contacts at each switch region in an open condition and disposed adjacent the spacer on a side thereof opposite the substrate, the planar layer of multiple conductive contact material electrically engaging each of the switch contacts of each switch contact region at a large number of separate and isolated electrical engagement regions and providing switch closure electrical coupling between engaged switch contacts when forced through an aperture of the separator into engagement with the switch contacts of a switch contact region, the resiliency of the multiple conductive contact material providing an only source of positional bias tending to oppose engagement of the multiple conductive contact material with the switch contacts of a switch contact region;

a conductive layer disposed in opposed relationship to the switch contacts at each switch contact region between the planar layer and an actuator on a side of the planar layer opposite the spacer to provide electrical coupling between planar layer conductors during switch closure; and

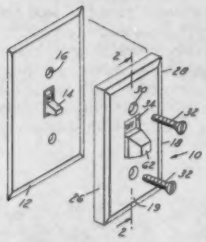
an actuator disposed in opposed relationship to the conductive layer of each spacer aperture to force the conductive layer into engagement with the conductors of the planar layer and to force the multiple conductive contact material through an aperture of the spacer, each actuator being biased toward a nonactuated, open contact position, and being coupled to force the multiple conductive contact material into switch closure engagement with the switch contacts to electrically close the switch contacts of a switch contact region in response to operator actuation.

4,164,635

WALL SWITCH TIMER

David A. Finch, Ann Arbor, and Charles M. Smillie, III, Orchard Lake, both of Mich., assignors to Time Systems, Inc., Ferndale, Mich.

Filed Mar. 22, 1978, Ser. No. 888,888
Int. Cl.[2] H01H 7/00, 43/00
U.S. Cl. 200—33 R 23 Claims



1. A timing device intended for operating an electrical toggle type wall switch having an operating arm projecting outwardly from a standard type electrical switch plate, said timing device comprising a body having a front wall provided with a first opening, a back wall provided with a second opening, and a peripheral wall connecting said front and back walls, internal wall means located in the interior of said body and defining a cavity, said timing device being adapted to overlie the switch plate, with said back wall in engagement with the switch plate and the outwardly projecting arm of the toggle switch extending into said cavity through said second opening provided in said back wall, a trip slide mounted in said cavity and movable in opposite directions between first and second limiting positions, said trip slide having means for receiving and engaging the outwardly projecting arm of the toggle switch for operating and tripping same as a result of the movement of said trip slide, spring means in said cavity engageable with said trip slide for urging same towards said first limiting position, said spring means being compressed by said trip slide when the latter is moved to said second limiting position, said trip slide including an arm portion projecting outwardly from said body through said first opening provided in said front wall and through which a force may be applied to the trip slide to move same relative to said spring means to one or the other of the limiting positions, a latch carried by said trip slide and engageable with said internal wall means to maintain the trip slide in said second limiting position with said spring means compressed, and fluid responsive timing means located within the interior of said body and engageable with said latch to operate and release said latch from engagement with said internal wall means after the expiration of a predetermined time interval thereby permitting said compressed spring means to move said trip slide to said first limiting position thus tripping the operating arm of said toggle switch.

4,164,636

INTEGRAL ELECTRICAL SHORTING SWITCH AND CONNECTOR ASSEMBLY

David A. Gallagher, Romeoville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 10, 1977, Ser. No. 823,226
Int. Cl.[2] H01R 13/70
U.S. Cl. 200—51 R 4 Claims

1. A switch and connector assembly, comprising:

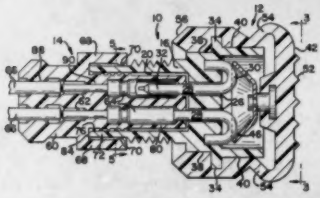
a switch body having a cavity formed in one end and a recess formed in the other mating end;

a plurality of switch terminals rigidly mounted in said switch body, each of said terminals including a respective switch portion extending into said cavity and a contact portion in or adjacent said recess, said switch recess having a plug orienting portion of non-circular cross-section remote

from the mating end of said switch body and a cylindrical portion adjacent the mating end of said switch body and bounded by a cylindrical recess wall;

a flexible boot sealed to said switch body to isolate said switch portions of said switch terminals in said cavity from the environment, said boot supporting a conductive member to engage said switch portions during selective operation of said switch;

a connector plug having a plurality of contacts for mating with said contact portions of said switch terminals, said connector plug including a forward portion of non-circular cross-section complementary to the non-circular cross-sectional shape of said recess orienting portion for cooperative insertion within said recess orienting portion to facilitate mating of said plug and body and insure mating of said plug contacts with said contact portions of said



switch terminals, and a rearward base portion dimensioned for cooperative insertion within said recess cylindrical portion;

said connector plug also including primary and secondary sealing means to isolate the interior of the mated connector assembly from the environment; said primary sealing means comprising a completely circumferential sealing lip engaging the exterior of said recess wall and said secondary sealing means comprising a plurality of completely circumferential sealing ridges engaging the interior of said recess wall;

said forward portion of said connector plug extending longitudinally beyond said primary and secondary sealing means to permit alignment within said recess orienting portion prior to engagement of said switch recess wall by said primary or secondary sealing means.

4,164,637

DUAL TREAD PLATE FOOT SWITCH

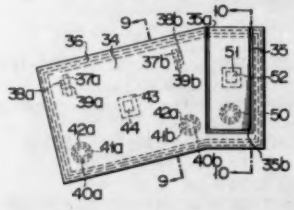
Kazumi Miyazi, Fuchu, and Hiroki Ichikawa, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,797

Claims priority, application Japan, Mar. 10, 1977, 52-29255[U]; Mar. 15, 1977, 52-31647[U]; Mar. 18, 1977, 52-34177[U]

Int. Cl.² H01H *13/16*

U.S. Cl. 200—86.5 **14 Claims**



1. A dual tread plate foot switch comprising:

a lower case made of a synthetic resin and having an integrally formed first engagement means;

a first tread plate made of a synthetic resin, the first tread plate being mounted to the lower case so as to be movable up and down with respect to the lower case, the first tread plate having an integrally formed second engagement means which is engageable with the first engagement means to prevent the first tread plate from disengaging from the lower case;

a first urging means for urging the first tread plate upwardly from the lower case;

a second tread plate cut out from the first tread plate and rockably hinged to the first tread plate;

a second urging means for urging the second tread plate upwardly from the lower case;

the first and second urging means being substantially independent of each other and both the first and second tread plates being moved downwardly against the upward urging force of both of the urging means when the second tread plate is pushed downward;

a first microswitch disposed between the first tread plate and the lower case and adapted to close when actuated by the first tread plate when the first tread plate is pushed downwardly relative to the lower case against the upwardly urging force of the first urging means; and

a second microswitch adapted to close when actuated by the second tread plate when the second tread plate is pushed downwardly relative to the lower case against the upward urging force of the second urging means;

the first and second tread plates and their associated urging means and microswitches being arranged such that the second microswitch is prevented from being closed by the second tread plate when the first microswitch is closed by pushing only the first tread plate downwardly.

4,164,638

METHOD FOR FLASH BUTT WELDING OF ANNULAR WORKPIECES

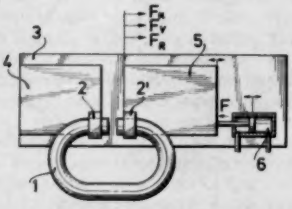
Klaus Ulmer, Dortmund, Fed. Rep. of Germany, assignor to Hugo Miebach GmbH, Dortmund, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 926,158

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733559

Int. Cl.² B23K *11/04*

U.S. Cl. 219—100 **6 Claims**



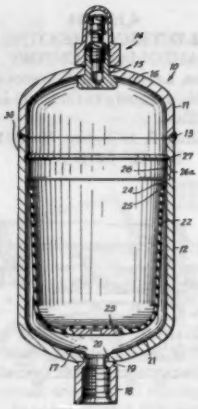
1. A method for flash butt welding of annular workpieces, particularly chain type of links, comprising the steps of: preheating workpiece ends to be welded before flashing and upsetting; applying successive preheat time cycles; controlling a feeding force for an upsetting slide during said successive preheat time cycles; minimizing said feeding force during the first preheat time cycle; increasing the feeding force progressively during advancing preheat time cycles depending on the increase in force required for workpiece deformation; flash welding and upsetting said workpiece ends to be welded.

4,164,639

METHOD OF FORMING A PRESSURE ACCUMULATOR

Abduz Zahid, 2424 Jupiter Dr., Los Angeles, Calif. 90046

Division of Ser. No. 685,315, May 11, 1976, Pat. No. 4,098,297.
This application Feb. 16, 1978, Ser. No. 878,281
Int. Cl.[2] B23K *11/08*
U.S. Cl. 219—117.1 5 Claims



1. The method of manufacturing a pressure accumulator device having a casing which is circular in section, said casing being formed of two metal shells, each having an open end and a closed end for the reception of a fluid inlet port and a gas charging valve, respectively, the steps of forming in an internal wall portion of one said shell section, in spaced relation below the open end thereof, an annular groove lying in a plane normal to the longitudinal axis of said shell section to define, at the junction of said wall portion and groove, an inwardly directed shoulder portion, positioning in said shell section having said groove a resilient cylindrical metal sleeve member having an annular first end portion and a second end portion supporting a bladder at a position within said shell whereat said first end portion is disposed immediately adjacent said shoulder portion, positioning an electrode against an interior increment of said first end portion of said sleeve, and causing said electrode progressively to scan the inner circumference of said first end portion while simultaneously inducing a current flow through said electrode, first end portion, and shell, thereby to form an annular fused connection between said first end portion and portions of said sleeve defining said groove, providing a continuous annular seal, and thereafter connecting said open end portions of said shells.

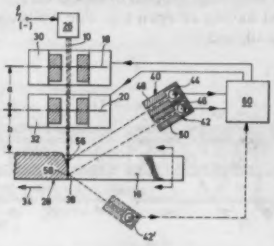
4,164,640

METHOD AND APPARATUS FOR POSITIONING A CHARGED PARTICLE BEAM

Wilhelm Scheffels, Puchheim, Fed. Rep. of Germany, assignor to Steigerwald Strahltechnik GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1977, Ser. No. 820,326
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634341
Int. Cl.[2] B23K *9/03*
U.S. Cl. 219—121 EM 17 Claims

1. A method for aligning a charge carrier beam of an industrial charge carrier beam device with respect to an elongated gap between two workpiece parts, characterised in that the position of the charge carrier beam with respect to the gap is determined at two positions, which are spaced in the direction of propagation of the charge carrier beam and in that the charge carrier beam is then deflected in accordance with the result of the position determination at two deflection positions placed at some distant short of the gap in the direction of



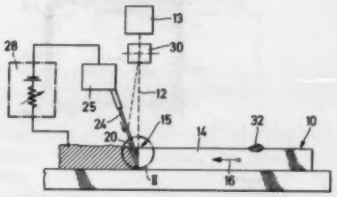
propagation in such a manner that it has a pre-determined course with the gap.

4,164,641

METHOD AND APPARATUS FOR ENERGY BEAM WELDING WITH FILLING MATERIAL

Wilhelm Scheffels, Puchheim; Johannes Koy, Germering; Franz Rappold; Walther Hiller, both of Munich, and Karl H. Steigerwald, Starnberg, all of Fed. Rep. of Germany, assignors to Steigerwald Strahltechnik GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1977, Ser. No. 821,476
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634833
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 EM 13 Claims



1. Method of welding a join between two parts by means of an energy beam extending along a beam axis, the energy beam being directed into the join to produce a welding zone containing molten material, and moved along the join relative to the parts of the work, and additive material being introduced in the welding zone continuously or discontinuously to fill a gap present at the join and/or influence the welding zone metallurgically, characterized in that the additive material is introduced into the melt at an acute angle to and at a point which is spaced alongside the central beam axis whereby said additive material penetrates deeply into said molten material.

4,164,642

RADIANT-HOT AIR HEATER

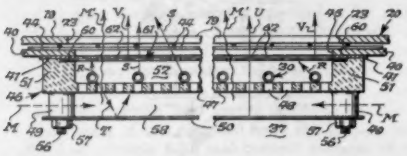
Edward A. Ebert, 203 Huxley Dr., Snyder, N.Y. 14226

Filed Dec. 20, 1976, Ser. No. 752,610
Int. Cl.[2] H05B *1/02;* H01H *37/46, 37/52*
U.S. Cl. 219—358 18 Claims

1. A radiant hot air heater comprising:
a primary radiant heat generator;
a perforate secondary radiator in close relationship to said generator;
switch means responsive to said secondary radiator but controlling said primary generator;
wherein said primary generator heats said secondary radiator to cause it to emit radiation at a longer wavelength

than radiation emitted from said generator and whereby both longer and shorter wavelength emission can radiate an article alongside of said secondary radiator;

a generator mount for support of said generator, said generator mount having an open top, side walls and a perforate bottom wall, and;



a generator reflector outside of but facing said perforate bottom wall;

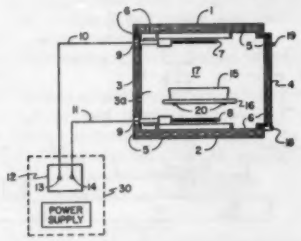
whereby radiation from said bottom wall and radiation from said primary generator passing through said perforations in said bottom wall are reflected back toward said bottom wall.

4,164,643

ENERGY-EFFICIENT BI-RADIANT OVEN SYSTEM

M. Virginia Peart, 1974 Indian Trail Dr.; David P. DeWitt, 3303 Georgton Rd., both of West Lafayette, Ind. 47906, and Susan T. Kern, 102 Turner Hall, Illinois State University, Normal, Ill. 61761

Filed Mar. 6, 1978, Ser. No. 883,469
Int. Cl.[2] H05B *9/00*
U.S. Cl. 219—411 **12 Claims**



1. An oven system comprising an oven cavity having inner top, bottom and side walls forming said cavity, one of said side walls having a door therein, a horizontal food product supporting rack member mounted within said cavity, wherein the improvement comprises:

an upper infrared radiant heat element mounted to one of said walls, said upper element being located above said food product supporting rack member;

a lower infrared radiant heat element mounted to one of said walls, said lower element being located below said food product supporting rack member;

said oven cavity walls having a low emissivity E and thus being highly reflective of infrared radiant heat energy;

a baking pan member within said oven cavity and positioned upon said food supporting rack member, the lower portion of said baking pan member having a high emissivity E and thus being highly absorptive of infrared radiant heat energy;

wherein said oven system has means for supplying infrared radiant energy directly to said baking pan member and a food product within said oven cavity from said upper and lower infrared radiant heat elements;

said oven system including control means for independently and simultaneously supplying power to said upper and lower infrared radiant heat elements and for adjusting said upper element to a first power setting and said lower element to a second power setting;

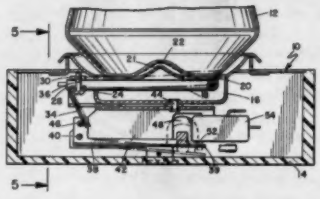
said upper infrared radiant heat element having a higher wattage rating than said lower infrared radiant heat element thus supplying more infrared radiant power to the top of a food product to counter the effect of evaporative heat losses during the baking process.

4,164,644

PORTABLE ELECTRICAL HEATING UNIT WITH AUTOMATIC CUTOFF

Duane C. Remsnyder, La Jolla, and Clarence C. Haynes, Escondido, both of Calif., assignors to Courtesy Interstate Corporation, San Diego, Calif.

Filed Aug. 7, 1978, Ser. No. 931,470
Int. Cl.[2] F27D *11/02*
U.S. Cl. 219—433 **6 Claims**



1. A portable electrical heating unit for heating a predetermined minimum quantity of material in a container, comprising:

a stationary housing,

an electrical heating element including an annular planar support surface surrounding an upwardly extending protrusion, for supporting a predetermined container,

pivot means pivotally supporting said heating element on said housing,

an electric circuit for connecting a source of electrical power to said heating element, said circuit including a weight responsive switch responsive to a predetermined minimum weight on said said support surface of said heating element for closing said switch, and a thermal switch in said circuit in series with said weight responsive switch and responsive to a predetermined temperature for interrupting said circuit,

a counterweight pivotally mounted below said heating element and connected to oppose weight supported on said heating element, said weight responsive switch being positioned to be actuated by movement of said counterweight in opposition to said predetermined minimum weight on said heating element, and

a container having a depression in the bottom for accommodating said upwardly extending protrusion.

4,164,645

DEVICE FOR HEATING LIQUIDS CONTAINED IN SEALED PLASTICS CONTAINERS

Amilcare Dogliotti, Alba, Italy, assignor to P. Ferrero C. S.p.A., Alba , Italy

Filed Jan. 16, 1978, Ser. No. 869,964
Claims priority, application Italy, Oct. 14, 1977, 69296 A/77
Int. Cl.[2] H05B *3/68*
U.S. Cl. 219—452 **15 Claims**

1. A device for heating a liquid in a container of thermoplastics material hermetically sealed by means of a metal cover, the device comprising in combination:

support means for the container adapted to accommodate the container in an inverted position;

an electrical resistive heater positioned in relation to the container support means to be in thermal contact substantially with the whole surface of the metal cover of the

inverted container during heating of the liquid therein, said heater being of nominal power rating sufficient to heat the liquid in a short time while having the electrothermal characteristics of a positive temperature coefficient of resistance;

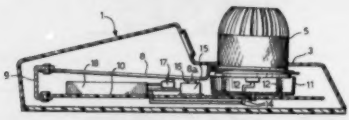
support means for the heater adapted to keep the heater in contact with the cover of the container accommodated in the support means during the period of the heating of the liquid,

a general switch, and

an electronic control unit connectable to a power supply through said general switch, the control unit comprising:

(a) input terminals for connection to a power supply,

(b) a Wheatstone bridge having four arms a supply diagonal and a measuring diagonal, the supply diagonal being connected to the input terminals, and the resistive heater



being included in one arm of said bridge, the measuring diagonal of which provides signal indicative of the temperature reached by the said resistive heater,

(c) a regulator circuit arranged to regulate the current supply to supply diagonal of said Wheatstone bridge in dependence upon the said signal on the measuring diagonal of the bridge so that, after an initial transient phase, the temperature of the heater remains substantially within a predetermined range for the whole duration of the heating of the liquid, and

(d) a timer arranged, after a predetermined interval timed from the moment of commencement of the heating, to switch off, by means of the regulator circuit, the current supply to the Wheatstone bridge and to open the general switch, disconnecting the control unit from the power supply.

4,164,646

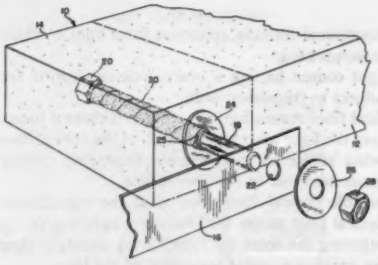
SOLID CURRENT CARRYING AND HEATABLE MEMBER WITH ELECTRIC CONNECTION

Frederick G. J. Grise, 87 Main St., Osterville, Mass. 02655

Filed Apr. 24, 1978, Ser. No. 899,482

Int. Cl.[2] H05B *3/08*

U.S. Cl. 219—541 **10 Claims**



1. In a solid current carrying and heatable member, said member comprising a bonded brick of discrete material including graphitic current carrying paths therethrough, said paths having a relationship to the brick so that the latter heats upon the passage of electric current through it,

electrical terminal means to apply electricity to the brick and the graphitic paths therein, said means comprising an elongated, substantially cylindrical, current carrying element embedded in the brick, the element and the brick being of different coefficients of expansion under conditions of heat, and the composition of the brick presenting a relatively rough surface to the element whereby the electric contact between element and brick may be relatively poor,

said current carrying element extending outwardly from said heatable brick, an electrode being connected to the current carrying element exteriorly of the heatable brick,

and an inaprevement that comprises a wrapping sheet tightly wrapping the current carrying element, said wrapping sheet being flexible and composed of graphite and forming a positive electric connection between heatable brick and the current carrying element.

4,164,647

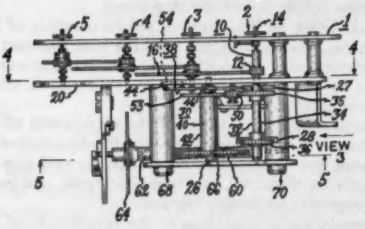
UNIDIRECTIONAL REGISTER HAVING DIFFERENT GEAR RATIOS FOR NORMAL AND REVERSE INPUT DRIVE ROTATION

Donald M. Ham, Rochester, N.H., assignor to General Electric Company, Somersworth, N.H.

Filed Feb. 13, 1978, Ser. No. 877,244

Int. Cl.[2] G06M *1/00*

U.S. Cl. 235—91 R **5 Claims**



1. In a meter of the type having a gear driven register, a unidirectional drive assembly for driving a register dial on said register comprising:

(a) a frame assembly including supporting members for the retention of gear assemblies rotatably mounted therebetween;

(b) an idler assembly including first and second coaxially mounted idler gears;

(c) a register drive assembly for driving a register dial including, first and second coaxially mounted dial drive gears, with said second dial drive gear being in continuous meshing engagement with said second idler gear;

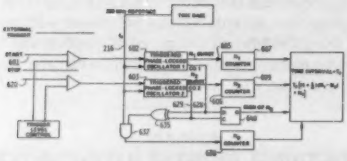
(d) an input drive assembly capable of being rotated in either of first and second directions, including a coaxially mounted input gear and a gear shift assembly mounted in frictional contact with said input drive assembly for coaxial rotation therewith, said gear shift assembly having first and second rotatably mounted pinions in continuous meshing engagement with said input gear, said first pinion being positioned adjacent said first dial drive gear and said second pinion being positioned adjacent said first idler gear, with the ratios of said input gear, said first dial drive gear and said first idler gear being substantially the same, said gear shift assembly being operable to bring said first pinion into meshing engagement with said first dial drive gear when said input drive assembly is rotated in said first direction to drive said register dial up-scale at a first rate determined by the ratio of said input gear and said first dial drive gear, and further being operable to bring said second pinion into meshing engagement with said first idler gear when said input drive assembly is driven in said second direction to drive said register dial up-scale at a second rate determined by the ratio of said second idler gear and said second dial drive gear.

4,164,648

DOUBLE VERNIER TIME INTERVAL MEASUREMENT USING TRIGGERED PHASE-LOCKED OSCILLATORS

David C. Chu, Woodside, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 23, 1978, Ser. No. 918,632
Int. Cl.[2] G01R *23/02*
U.S. Cl. 235—92 FQ 9 Claims



1. A method for measuring a time interval between a start and stop event, said method comprising the steps of:

providing a time base signal having a predetermined period, T_0;

providing a start oscillator signal in response to and phase coherent with the detection of the start event;

providing a stop channel oscillator signal in response to and phase coherent with the stop event;

accumulating an indication of the recurrences of the start channel oscillator signal from the time the start event is detected until a coincident point between the start oscillator signal and the time base signal is detected, said indications comprising an integer N_1;

accumulating an indication of the recurrences of the stop channel oscillator signal between the detection of the stop event and a coincident point between said stop channel oscillator signal and said time base signal, said indications comprising an integer N_2; and

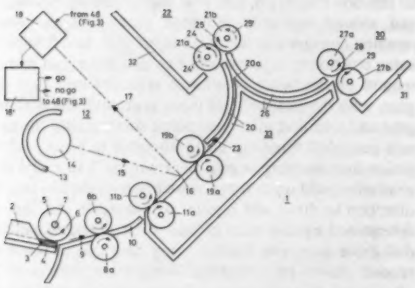
accumulating an indication of the recurrences of the time base signal between the detection of a coincident point between said start channel oscillator signal and said time base signal and the detection of a coincident point between said stop channel oscillator signal and said time base signal, said indication comprising an integer, N_0.

4,164,649

METHOD AND APPARATUS FOR SHEET TRANSPORT IN AUTOMATIC READING EQUIPMENT

Max Anderegg, and Kurt Rüttimann, both of Forch, Switzerland, assignors to Feller AG, Horgen, Switzerland

Filed Jul. 31, 1978, Ser. No. 929,409
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734371
Int. Cl.[2] G06K *13/12*; B65H *5/22*; B07C *5/34*
U.S. Cl. 235—480 5 Claims



1. A method for sheet transport in an automatic reading equipment in which individual sheets to be read are removed from a stack, transported to a reading position and thereafter transported away from said position, comprising:

introducing a sheet transported away from the reading position initially only partially into a first collection space for successfully read sheets,

introducing the partially introduced sheet completely into said collection space upon occurrence of a "go" decision from the reading,

again withdrawing the partially introduced sheet from the collection space for successfully read sheets by an oppositely directed movement upon occurrence of a "no go" decision, and

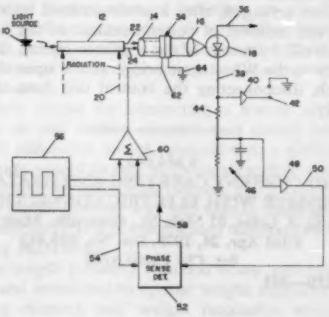
supplying the withdrawn sheet to a second collection space for unsuccessfully read sheets.

4,164,650

MEANS FOR REDUCING NUCLEAR RADIATION-INDUCED FLUORESCENCE NOISE IN FIBER-OPTICS COMMUNICATIONS SYSTEMS

James C. Blackburn, Adelphi, and Alan Bromborsky, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 8, 1977, Ser. No. 814,019
Int. Cl.[2] H04B *9/00*
U.S. Cl. 250—199 6 Claims



1. An optical filtering apparatus for a light communication system comprising:

a light source having a center communication frequency subject to frequency drift;

optical fiber means having a first end thereof located adjacent the light source, the length of the optical fiber means being subjected to externally impinging energy which generates noise in the fiber means;

a tunable optical filter located at the second end of the optical fiber means for filtering a light source signal and rejecting the noise, the filter having electrical input means for varying a center frequency of the filter;

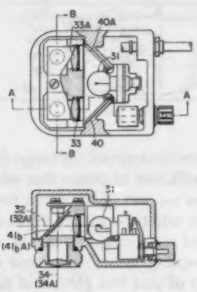
photodetection means located at an output of the filtering means for converting the filtered light signal to an electrical signal; and

tuning circuit means responsive to the center frequency of the light source for shifting the center frequency of the filter to coincide with that of the center frequency of the light source, the tuning circuit means having an input connected to the photodetection means and having an output connected to the electrical input means.

4,164,651
APPARATUS FOR PREVENTING INCORRECT COLLATING OF SIGNATURES

Masahiro Oikawa, Hachioji, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1977, Ser. No. 826,068
Claims priority, application Japan, Aug. 20, 1976, 51-110773[U]; Aug. 20, 1976, 51-110774[U]; Jul. 18, 1977, 52-85873
Int. Cl.[2] H01J 3/14
U.S. Cl. 250—216 5 Claims

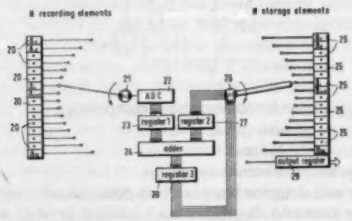


1. An apparatus including a photoelectric detector assembly for preventing incorrect collating signatures, said assembly having a first optical system and a second optical system each of which comprises:
(a) a common light source for said first and second optical systems;
(b) a condensor lens for converting light beams emitted from said light source into parallel light beams; and
(c) optical means for introducing said parallel beams through a focusing lens to a surface of each signature and for introducing substantially all light beams reflected by said surface of each signature to a photoelectric element.

4,164,652
PROCESS AND ARRANGEMENT FOR REGISTRATION OF ION-, ELECTRON- AND LIGHT-SPECTRA

Hermann Wollnik, Fernwald, Fed. Rep. of Germany, assignor to Varian Mat GmbH, Bremen, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,696
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731129
Int. Cl.[2] B01D 59/44
U.S. Cl. 250—281 12 Claims

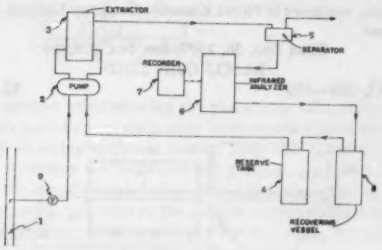


1. A method for obtaining data representing the intensity spectrum of a light, electron or ion spectrum comprising:
moving the spectrum past a detector arrangement of N side-by-side detectors A_1 through A_N, whereby each said detectors registers a content dependent upon the part of the spectrum at a corresponding position;
reading the contents of all said detectors once each period corresponding to the period said spectrum moves the width of one of said side-by-side detectors; and
adding the content read from each detector A_i with the contents read from A_{i-1} through A_1 during the previous $i-1$ periods, respectively, to obtain summation over N periods of each spectrum part of a width equal to the detector width.

4,164,653
SOLVENT FOR THE EXTRACTION OF OIL FRACTION IN WATER

Syozo Matumoto, Kyoto, and Mitsuhiro Okamoto, Neyagawa, both of Japan, assignors to Horiba, Ltd., Kyoto and Daikin Kogyo Co., Ltd., Osaka, both of, Japan

Filed Nov. 29, 1977, Ser. No. 855,906
Claims priority, application Japan, Dec. 8, 1976, 51-148085
Int. Cl.[2] G01T 1/167
U.S. Cl. 250—301 6 Claims

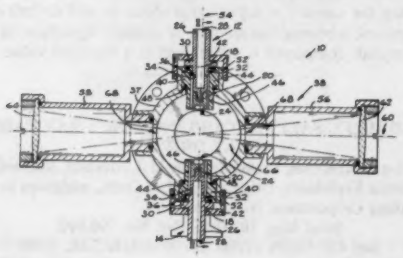


1. In a method for extracting and measuring the concentration of an oil fraction in water which comprises extracting the oil from a water sample with a solvent and analyzing the concentration of oil in the solvent by means of an infrared analyzer, the improvement wherein the solvent utilized to extract the oil from the water sample consists essentially of a low polymer of chlorotrifluoroethylene.

4,164,654
DEVICE FOR GENERATING AN ATOMIC CLOUD

Louis R. P. Butler, and Hendrik G. C. Human, both of Pretoria, South Africa, assignors to The South African Inventions Development Corporation, Pretoria, South Africa

Filed Feb. 14, 1978, Ser. No. 877,657
Int. Cl.[2] H01J 27/00
U.S. Cl. 250—426 32 Claims



1. A device for generating an atomic cloud comprising,
a housing having an inlet and an outlet port through which a gas may be introduced into and removed from the housing;
a cathode having a discharge surface located within the housing;

an anode also located within the housing, spaced from and electrically insulated from the cathode and located such that a discharge may occur between the discharge surface of the cathode and the anode;

means for connecting a suitable potential across the anode and cathode for causing a glow discharge between the anode and cathode discharge surface thereby to eject atoms from the cathode discharge surface; and

gas flow directing means for directing a flow of the gas from the inlet port outwardly away from or past the cathode discharge surface, said gas flow directing means comprising means for causing the ejected atoms to move away from the cathode discharge surface to a region beyond the cathode glow region.

4,164,655

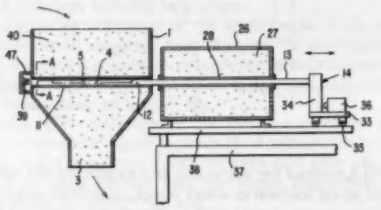
APPARATUS FOR MEASURING QUANTITY OF ASPHALT INGREDIENT IN AN ASPHALT COMPOUND

Ichiro Noma, Osaka, and Kazuo Taniguchi, Hirakata, both of Japan, assignors to Noma Komuten Company Limited, Osaka, Japan

Filed Dec. 30, 1977, Ser. No. 865,964

Int. Cl.[2] G01N *23/00*

U.S. Cl. 250—436 **12 Claims**



1. An apparatus for measuring the quantity of asphalt ingredient in an asphalt compound in an apparatus for mixing asphalt ingredient and an aggregate to form the asphalt compound comprising:

a container;

a means for radiating a neutronic line provided within the container which reacts with a hydrogen atom of said asphalt ingredient in such a manner as to decrease the energy of the neutronic line;

a detector provided in said container adjacent said radiating means for detecting changes in the energy of said neutronic line;

a continuous conveying means for continuously supplying asphalt compound into said container; and

a means responsive to the detector for automatically adjusting the amount of asphalt ingredient in said asphalt compound whereby the amount of asphalt ingredient in said asphalt compound is maintained at a standard value.

4,164,656

PARALLEL SAFETY COUPLING FOR X-RAY TABLE TILT DRIVE

Charles Z. Krasznai, Trumbull; Donald J. Meshkil, Milford, and Morris Krumholtz, Bridgeport, all of Conn., assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1977, Ser. No. 798,992

Int. Cl.[2] G01N *21/00, 23/00;* G21K *5/06, 5/08*

U.S. Cl. 250—439 R **11 Claims**

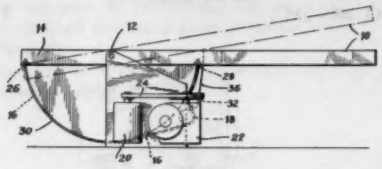
1. X-ray apparatus, comprising:

a patient supporting table axially mounted for tilting movement about an axis of rotation, said axis of rotation being eccentric to said table such that gravity tends to return said table to a rest position;

a drive motor;

a main mechanical drive coupling means linking said motor to said table for tilting said table about said axis of rotation as said motor rotates;

an auxiliary coupling means between said motor and said table in parallel with said main coupling means for preventing an abrupt falling of said table to the rest position upon a mechanical failure of said main mechanical drive coupling means, said auxiliary coupling means having a substantially constant amount of mechanical free play



over the entire operational tilt range of said table, said free play being sufficient to assure that said auxiliary coupling means carries no part of the drive force transferred from said motor to said table except in the event of mechanical failure of said main coupling means, in which event said auxiliary coupling means links said motor to said table after take up of said free play, said substantially constant free play being sufficiently small to prevent an unsafe amount of table drop during take up of said free play.

4,164,657

APPARATUS FOR TOMOGRAPHY

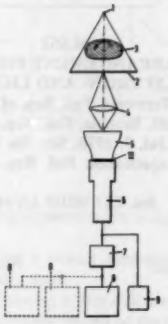
Simon Duinker, Bloemendaal, and Hendrik Mulder, Delft, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Netherlands

Filed May 9, 1977, Ser. No. 795,217

Claims priority, application Netherlands, May 17, 1976, 7605253

Int. Cl.[2] A61B *6/02*

U.S. Cl. 250—445 T **19 Claims**



1. An apparatus for tomography, comprising

an X-ray or gamma-ray source,

one detector body, and

an image reconstruction apparatus,

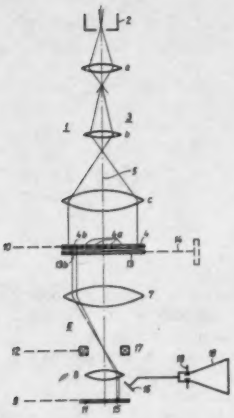
wherein said detector body is a two-dimensional, continuous X-ray screen having dimensions selected in relation to the disposition of the object section to be examined and of the source of radiation relative to the detector body so that the projection of the object section, as far as its greatest cross-sectional dimension is concerned, is at least completely depicted on the detector body, and the dimension of the X-ray screen at right angles to said projection is sufficient to accommodate at least two such projections of adjacent object sections.

4,164,658

CHARGED-PARTICLE BEAM OPTICAL APPARATUS FOR IMAGING A MASK ON A SPECIMEN

Jürgen Frosien; Burkhard Lischke, and Andreas Oelmann, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,637
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702444
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—492 A 2 Claims



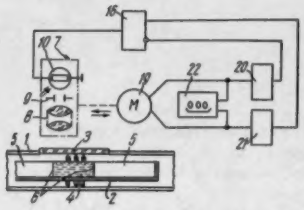
1. In a charged-particle beam optical apparatus for imaging a first mask including a plurality of apertures on a specimen to be irradiated, said mask being uniformly illuminated by a beam through a plurality of condenser lenses, said apparatus including means for adjusting the position of said mask relative to said specimen, a selected area of said specimen having an adjustment marking disposed thereon which is illuminated by a ray of charged particles from said beam passing through a test opening provided in said mask, said apparatus further including means for detecting radiation emanating from said specimen, the improvement comprising a second mask, having at least one aperture which is alignable with said test opening, mounted in said apparatus and movable into positions above and below said first mask, for aligning said test opening and said aperture in said first and second masks and covering said plurality of apertures in said first mask so as to permit charged particles from said beam to pass only through said test opening in said first mask and said aperture in said second mask, said condenser lenses being excited with the same excitation during an adjustment of the positions of images of said adjustment marking and said test opening on the screen of a monitor as during an operational imaging of said first mask on said specimen thereby eliminating optical errors caused by variations in the excitation of said condenser lenses during said adjustment of the positions of said adjustment marking and test opening and said imaging of said first mask on said specimen.

4,164,659

METHOD OF MONITORING THE PHASE STATE OF MATERIAL IN PROCESSES INVOLVING CRYSTALLIZATION FROM MELT AND APPARATUS FOR PERFORMING SAME

Ilya N. Munits, and Sergei E. Maraev, both of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti, U.S.S.R.

Filed Dec. 16, 1976, Ser. No. 751,349
Int. Cl.[2] G01N *21/22;* H01J *39/12*
U.S. Cl. 250—561 12 Claims



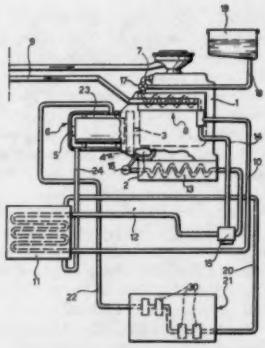
1. A method of monitoring the phase state of a material in processes including crystallization from a melt, comprising the steps of receiving radiation issuing from the material being treated; detecting said radiation and generating a corresponding electric output signal; and continously analyzing the amplitude-frequency spectrum of the electric output signal to determine the presence in this signal of a low-frequency component which is indicative of the state of the material.

4,164,660

PLANT FOR THE PRODUCTION OF ELECTRICAL ENERGY AND HEAT

Mario Palazzetti, Avigliana, Italy, assignor to Fiat Societa' per Azioni, Turin, Italy

Filed Oct. 25, 1977, Ser. No. 845,082
Claims priority, application Italy, Oct. 26, 1976, 69573 A/76
Int. Cl.[2] F24D *3/02*
U.S. Cl. 290—2 4 Claims



1. Plant for the production of electrical energy and heat of the type comprising:

an internal combustion engine having a coolant jacket for the circulation of liquid coolant, and a coolant inlet and outlet communicating with said jacket;

a primary liquid coolant circuit including said engine coolant jacket, a gas/liquid heat exchanger through which the engine exhaust gases flow to give up heat to coolant flowing out of the jacket outlet and a liquid/liquid heat ex-

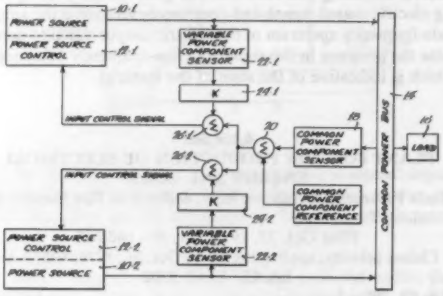
changer disposed in said primary circuit between said gas/liquid heat exchanger and the jacket inlet;
a secondary liquid circuit comprising said liquid/liquid heat exchanger and a heating unit, and
an electrical generator driven by the engine,
wherein the improvement consists in the electrical generator having a casing and a cooling jacket surrounding the casing, said generator cooling jacket being connected in said secondary circuit to receive a cooling flow of liquid therefrom.

4,164,661

LOAD SHARING SYSTEM

David J. Hucker, Rockford, Ill., and Richard W. Reynolds, Ames, Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 9, 1978, Ser. No. 868,402
Int. Cl.[2] H02J *3/46, 3/04, 1/10*
U.S. Cl. 307—57 **10 Claims**



1. A system for controlling load division among plural power sources coupled in parallel, comprising:
at least two power sources each providing output power having two power components wherein the output power from each source is responsive and proportional to an individual input control signal;
means connecting the outputs of each power source together, with one of said two components common;
means for sensing the magnitude of the power component common to the power sources;
a source of reference for said common power component;
means for comparing said reference with the common power component to provide a common error signal;
means for sensing the magnitude of the other of the two power components for each of the power sources to provide signals representative thereof;
means for summing the signal representative of the magnitude of the other component for each of the power sources with said common error signal to provide an individual input control signal for each power source; and
means for each power source responsive to the individual input control signal therefor to control the output power from each said power source.

4,164,662

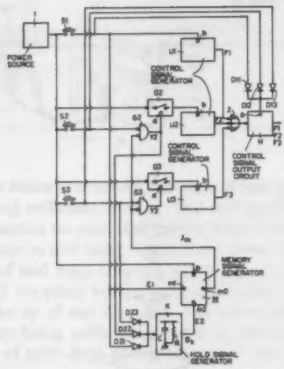
Patent Not Issued For This Number

4,164,663

SEQUENTIAL CONTROL SIGNAL GENERATOR

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Oct. 3, 1977, Ser. No. 839,008
Claims priority, application Japan, Oct. 1, 1976, 51-118386
Int. Cl.[2] H04M *11/00*
U.S. Cl. 307—115 **4 Claims**



1. A sequential control signal generator comprising:
at least first and second control signal generators, each having a power source input;
a control signal output circuit responsive to signals from said control signal generators;
at least first and second key switches;
at least one switching circuit having a control input;
a DC power source connected to said power source input of said first control signal generator via said first key switch;
a hold signal generator having an input connected to said DC power source via said first key switch;
a memory signal generator having first and second inputs respectively connected to (a) said DC power source via said first key switch and (b) the output of said hold signal generator; and
at least one switching signal generator having first and second inputs respectively connected to (a) said DC power source via said second key switch and (b) the output of said memory signal generator and the output of said switching signal generator being connected to said control input of said switching circuit;
wherein when connected at the power source input to the DC power source through the first key switch, the first control signal generator provides a first control signal;
wherein when connected at the power source input to the DC power source through the switching circuit, the second control signal generator provides a second control signal;
wherein when sequentially supplied at its input with the first and second control signals, the control signal output circuit provides a sequential control signal having a sequential arrangement of the first and second control signals;
wherein when connected at the input to the DC power source through the first key switch, the hold signal generator provides a hold signal which lasts from the moment of connection of the input to the DC power source through the first key switch or a moment a little behind it to a predetermined moment after disconnection of the input from the DC power source through the first key switch;

wherein when connected at the first input to the DC power source through the first key switch and supplied at the second input with the hold signal, the memory signal generator generates a memory signal which lasts while the hold signal lasts;

wherein when connected at the first input to the DC power source through the second key switch and supplied at the second input with the memory signal, the switching signal generator provides a switching signal while connected at the first input to the DC power source through the second key switch; and

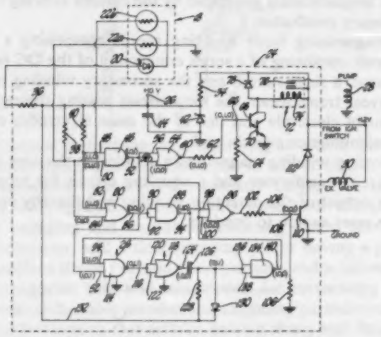
wherein when supplied at the control input with the switching signal, the switching signal connects the power source input of the second control signal generator to the DC power source while the switching signal lasts.

4,164,664

CONTROL CIRCUIT FOR LOAD-LEVELING SHOCK ABSORBERS

Stanley J. Kasiewicz, 29852 Springhill Dr., Southfield, Mich. 48076

Filed Dec. 13, 1977, Ser. No. 860,276
Int. Cl.[2] H01H *35/38*
U.S. Cl. 307—118 **4 Claims**



1. A control circuit for use in the pressure regulation of a pressurized load-leveling device, the load-leveling device being equipped with detector means having first and second output signals for providing a first signal condition to represent underpressurization, a second signal condition to represent overpressurization, and a third signal condition to represent proper pressurization, the control circuit comprising:

a first control channel including first logic gate means having first and second input terminals which are adapted to receive the first and second output signals of the detector means without difference as to order, and which is responsive to the first signal condition to provide a first output signal for conditioning the operation of pressurizing means to increase the pressure in the load-leveling device;

a second control channel including second logic gate means having first and second input terminals which are adapted to receive the first and second output signals of the detector means without difference as to order, and which is responsive to the second signal condition to provide a second output signal for conditioning the operation of depressurizing means to decrease the pressure in the load-leveling device; and

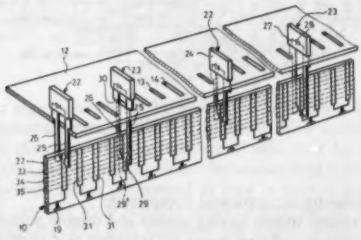
timing circuit means, intercoupled with said first and second control channels and responsive to the occurrence of a first or second output conditioning signal from the first or second logic gate means when said first and second output conditioning signal is continuous for a minimum predetermined time duration, for providing an enabling signal to the first and second control channels, which, in conjunction with the first or second output signal, enables the operation of the pressurizing or depressurizing means, respectively.

4,164,665

MANUALLY PROGRAMMABLE STORAGE DEVICE

Hans Berger, Schönaich, Fed. Rep. of Germany, assignor to Centra-Bürkle GmbH & Co., Schönaich, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,846
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647829
Int. Cl.[2] H01H *7/00*
U.S. Cl. 307—141 **21 Claims**



1. A program storage device which can be variably manually programmed, comprising:

a housing;

at least one elongated printed circuit board mounted within the housing, and having: a plurality of primary electrical contact surfaces arranged adjacently and in at least one row in the longitudinal direction of the circuit board; and at least one secondary contact surface that extends in the longitudinal direction of the circuit board;

a transverse board serving as the top wall of the housing and having a row of slits formed therein for each circuit board, each row being longitudinally aligned with its respective circuit board; and

a plurality of slide contacts each having interconnected electrical contacts, said slide contacts being constructed for insertion into the slits formed in the transverse board and for support by the transverse board, such that the interconnected electrical contacts electrically connect at

least one primary and at least one secondary contact surface of the printed circuit board, wherein the openings of the slits in at least one row of slits vary in a periodic fashion along the extent of said at least one row, and wherein each slide contact has a number of staggered step regions situated in the longitudinal direction of the slide contact, which number corresponds to the number of different slit openings of said slits, said step regions serving to limit the insertion depth of said slide contact.

4,164,666

ELECTRONIC APPARATUS USING COMPLEMENTARY MOS TRANSISTOR DYNAMIC CLOCKED LOGIC CIRCUITS

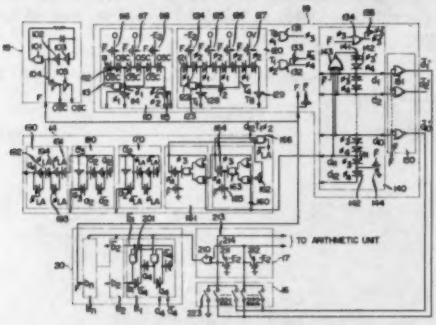
Masataka Hirasawa, Kanagawa, Japan, assignor to Toyko Shibaura Electric Co., Ltd., Japan

Filed Jun. 7, 1977, Ser. No. 804,440

Claims priority, application Japan, Jun. 8, 1976, 51-66704; Jun. 8, 1976, 51-66711; Jul. 31, 1976, 51-91649

Int. Cl.[2] H03K *21/30*; G06F *1/04*; H03K *19/08*

U.S. Cl. 307—208 **10 Claims**



1. An electronic apparatus comprising:

timer circuit means having enable and disable periods;

timer circuit enabling means for initiating said enable period of said timer circuit means by applying a control signal to said timer circuit means to enable said timer circuit means to produce at the output thereof a fixed level voltage for a fixed time;

dynamic clocked logic circuits each having at least one input, an output having a storage capacitance, and first and second clock inputs; each of said logic circuits being alternately enabled and disabled by a complementary pair of clock pulses applied to said first and second clock inputs, and while enabled each logic circuit producing output signals at said outputs whose voltage level depends upon the voltage level at said inputs and while disabled storing said output signals in said storage capacitance; and

clock pulse supplying means coupled with said timer circuit means for supplying clock pulses to said first and second clock inputs of said dynamic clocked logic circuits during said enable periods of said timer circuit means, and for supplying disabling voltages with fixed levels to said first and second clock inputs of said dynamic clocked logic circuits during said disable periods of said timer circuit

4,164,667

SEMICONDUCTOR SWITCH DEVICE

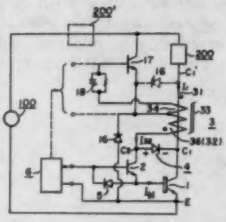
Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 695,055, Jun. 11, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,194

Claims priority, application Japan, Jun. 23, 1975, 50-78321; Aug. 28, 1975, 50-104308

Int. Cl.[2] H03K *17/60*

U.S. Cl. 307—253 **9 Claims**



1. A semiconductor switch device comprising:

a semiconductor switch with a control electrode and a plurality of main electrodes disposed serially in a power path connecting a DC power source and a load;

a current transformer having a core and having a primary conductor disposed serially in the power path for passing current in response to a turn-on of the semiconductor switch and a secondary winding connected to the control electrode of the semiconductor switch, current flowing in the primary conductor generating a magnetization;

a magnetizing force applying means for magnetizing the core of the current transformer in a direction opposite to the magnetization generated by the current flowing in the primary conductor;

the magnetizing force applying means comprising a loop circuit consisting of a series connection of the DC power source, a reset switch and the secondary winding of the current transformer, the loop circuit passing through the control electrode and one of the main electrodes of the semiconductor switch; and

a detecting winding magnetically coupled to the core of the current transformer and a coupling circuit for receiving the output of the detecting winding and thereby causing the reset switch to conduct.

4,164,668

METHOD OF CORRECTING THE VOLTAGE COEFFICIENT OF RESISTORS IMPLANTED OR DIFFUSED IN A SEMICONDUCTOR SUBSTRATE

Francois X. Delaporte, Cagnes sur Mer; Robert M. Hornung, Evry; Anne-Marie Lamouroux, Prades; Gerard M. Lebesnerais, Ponthierry, and Jean-Paul J. Nuez, Mennecy, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1977, Ser. No. 796,266

Int. Cl.[2] H01L *27/04*

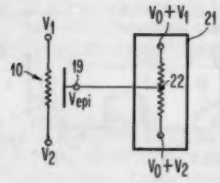
U.S. Cl. 307—303 **4 Claims**

4. A resistor structure comprising:

a semiconductor body including a resistor region of a first conductivity type and located within an electrically isolated portion of a layer of opposite conductivity type,

means for applying potentials to the opposite ends of said

resistor region so that the potential difference across said region varies, and



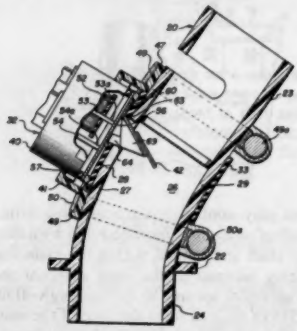
means for applying to said layer a potential which differs by a constant magnitude from the arithmetic mean value of the potentials applied to the ends of the resistor region.

4,164,669

SEED SENSOR

John T. Knepler, Chatham, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Sep. 10, 1975, Ser. No. 612,017
Int. Cl.[2] H02K *35/00*
U.S. Cl. 310—15 12 Claims



1. A sensor comprising: means forming an article flow path, transducer means positioned adjacent to said flow path means, said transducer including a resiliently deflectable member having fixed opposite portions and a deflectable mid-portion, article engaging and transducer actuating means secured to said transducer, said article engaging means having a portion engageable with one of said fixed portions and a second portion engageable with said mid-portion for maximizing actuation of the deflectable member and extending partially into said flow path means so that articles passing along said flow path will strike said article engaging means to deflect the same and actuate said transducer means for producing an output signal in response to said deflection.

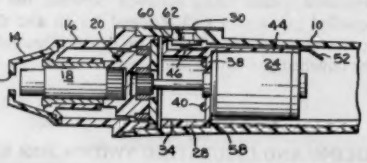
4,164,670

SEALED MOTOR MOUNT FOR HAND HELD DEVICE

William M. Maher, Churchville, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Mar. 15, 1978, Ser. No. 886,673
Int. Cl.[2] H02K *7/14*
U.S. Cl. 310—50 5 Claims

1. A motor assembly for a tube mount comprising,
a tube having one open end with a tapered inner surface and an opening therethrough downstream of said end facing said surface,
a switch wiper movably mounted in said opening,
a sized motor mount including a second tubular member with an outer tapered surface for telescopic mating with said tapered inner surface,
said member having an end vertical wall,
a smaller sized motor secured to and cantilevered from said wall into said tube,
positioning stop means between said member and tube and,



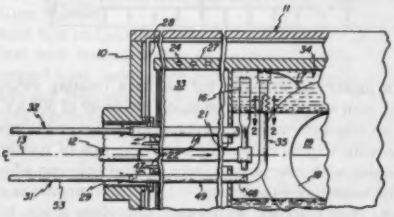
outwardly biased terminals on said member bridged by said wiper
whereby said motor assembly is slid into the blind tube for sealed engagement therewith in a concentric mount with axial and radial alignment of the switch.

4,164,671

RESISTOR-CONTAINING CRYOGENIC CURRENT LEAD

Bruce B. Gamble, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 22, 1978, Ser. No. 908,535
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—52 11 Claims



1. In a superconducting rotor comprising means connected to said rotor for rotation thereof, means in flow communication with the rotor winding chamber of said rotor for supplying liquefied gas thereto as coolant for maintaining rotor windings disposed therein submerged at least in part in a pool of liquefied gas and at cryogenic temperatures, means in flow communication with said chamber for withdrawing coolant vapor therefrom, and means electrically connected to said rotor windings for carrying current between a current distribution device at room temperature and said rotor windings at cryogenic temperatures,
the improvement for adapting said rotor for intermittent operation with minimal coolant usage, wherein:
(a) a portion of each current-carrying means includes means open at both ends for conducting a confined flow of coolant vapor along and in contact with said current-carrying means,
(b) said vapor-conducting means being in flow communication at one open end thereof with a part of said vapor-withdrawing means,
(c) said portion having a terminal length thereof extending into said rotor winding chamber,
(d) said terminal length being disposed in the generally radial direction locating the other open end of said vapor-conducting means adjacent the wall of said rotor winding chamber,
(e) said other open end being submerged below the surface

of said pool of liquefied gas during operation to enable liquefied gas to freely enter therein,

(f) each current-carrying means includes a current lead having a relatively high lead aspect ratio, and

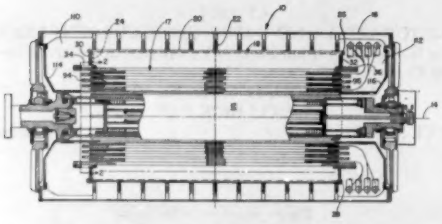
(g) each current lead is provided with resistance means connected in electrical series therewith having relatively high electrical resistance for vaporizing liquefied gas, each resistance means being disposed between the level of liquefied gas within said terminal length and the other open end thereof and in heat exchange relationship with the liquefied gas within said length.

4,164,672

COOLING AND INSULATING SYSTEM FOR EXTRA HIGH VOLTAGE ELECTRICAL MACHINE WITH A SPIRAL WINDING

Carl Flick, Pittsburgh, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 18, 1977, Ser. No. 825,862
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—54 **18 Claims**



1. An insulating structure for use in a rotating electrical machine with a high voltage rating on the order of 500 kV and having an armature winding comprised of phase coils disposed in paths which spiral outwardly about the axis of rotation of the machine with interphase spaces formed between adjacent coils, the insulating structure including the combination of an insulating layer disposed within each interphase space, and at the inner and outer peripheries of the winding, each layer comprising a plurality of superposed sheets formed of a material capable of being impregnated with a dielectric liquid, a dielectric liquid impregnated in the material of the insulating layers, means forming passageways extending between each side of each layer and the coil adjacent thereto, a transformer oil in the passageways in heat exchange contact with the coil surfaces, and means for circulating the oil through the passageways for cooling the coils.

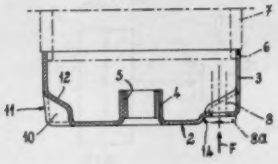
4,164,673

BEARING MADE OF STAMPED (EMBOSSED) SHEET IRON

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, Lyons, France

Filed Jan. 16, 1978, Ser. No. 869,594
Claims priority, application France, Jan. 18, 1977, 77 01833
Int. Cl.[2] H02K *5/00*; F16C *35/00*
U.S. Cl. 310—89 **10 Claims**

1. A bell-shaped type swaged sheet metal bearing in the form of a container bordered by a cylindrical skirt intended to be supported by at least two assembly tie rods on a shoulder of a rotor magnetic circuit, the bearing comprising a central duct adapted to accommodate a bearing bushing, at least one swaged rib integral with said skirt, having two ends and having two respective apertured areas near respective ones of said ends for the passage and support of the assembly tie rods, said rib extending without loss of continuity between said apertured areas and extending outwardly up to said cylindrical skirt



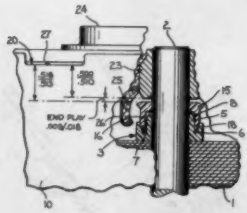
beyond said aperture areas so as to form at least one box girder, said ends of said rib being substantially coplanar with said skirt.

4,164,674

ELECTRIC MOTOR END PLAY CONTROL

John B. Buckman, and Robert E. Lykes, both of Troy, Ohio, assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jul. 13, 1977, Ser. No. 815,098
Int. Cl.[2] H02K *5/16*
U.S. Cl. 310—90 **3 Claims**



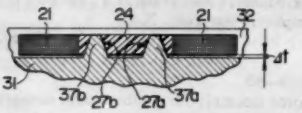
1. In an end play control construction regulating the end play of the shaft of an electric motor having a rotating member secured to the shaft and lodged within the main frame of the motor, a bushing secured to the shaft adjacent the rotating member, a thrust collar secured to the bushing within the order of 0.513 to 0.518 of an inch from the face of the main frame, a bearing assembled over one end of the shaft within the order of 0.500 to 0.510 of an inch from the face of the main frame and thereby providing a clearance between the thrust collar and bearing of the order of 0.003 to 0.018 of an inch to establish a minimum amount of end play of the shaft.

4,164,675

ROTOR OF CORELESS MOTOR AND METHOD OF MANUFACTURING SAME

Masaaki Sato, Hachioji, and Shinya Kosaka, Tama, both of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Aug. 29, 1977, Ser. No. 828,679
Claims priority, application Japan, Oct. 19, 1976, 51/125791; Oct. 19, 1976, 51/125792
Int. Cl.[2] H02K *7/04*
U.S. Cl. 310—268 **6 Claims**



1. A method of manufacturing a rotor of a coreless motor by placing a commutator integral with a rotary shaft centrally within a casting jig, disposing rotor coils around the commuta-

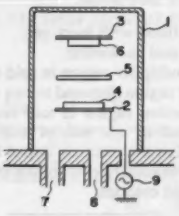
tor, and casting a synthetic resin into the jig to integrally mold the rotor, characterized by the steps of forming the rotor coils on individual bobbins having positioning openings, providing the jig with guide pins therein in the region of the rotor coils, fixedly disposing the rotor coils in the jig by fitting the openings on the guide pins, and subsequently casting the rotor coils integrally with the rotary shaft and the commutator in a casting material to form a balanced rotor.

4,164,676

PIEZOELECTRIC CRYSTALLINE FILM OF ZINC OXIDE CONTAINING ADDITIVE ELEMENTS

Hiroshi Nishiyama, Mukou; Toshio Ogawa, and Tasuku Mashio, both of Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyoshi, Japan

Filed Jul. 24, 1978, Ser. No. 927,401
Claims priority, application Japan, Jul. 28, 1977, 52/91109
Int. Cl.² H01L *41/18*
U.S. Cl. 310—360 **19 Claims**



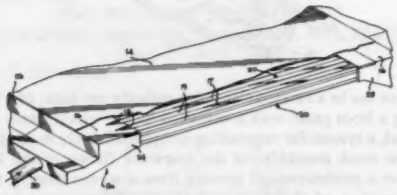
1. A piezoelectric crystalline film on a substrate, said film being a crystalline zinc oxide film with a c-axis perpendicular to the substrate surface, characterized in that said crystalline zinc oxide film contains, as additive elements vanadium, manganese, and at least one element selected from the group consisting of chromium, iron, cobalt and nickel.

4,164,677

ANODE ASSEMBLY FOR HIGH POWER ELECTRON BEAM LASER

Vahram W. Biricik, Rancho Palos Verdes; Kang R. Chun, Pacific Palisades; Laurence S. Gresko, Long beach, and John S. Barnett, Sepulveda, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed May 22, 1978, Ser. No. 907,989
Int. Cl.² H01J *7/26*
U.S. Cl. 313—35 **5 Claims**



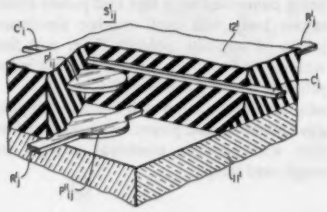
1. An anode assembly for an electron beam laser comprising:
a. a plurality of elongated web elements arranged in side by side relationship, there being elongated gaps therebetween,
b. a block support element attached to each of the opposite ends of the web elements to join said web elements together into an integral unit,
c. each of said web elements including a centrally located elongated web plate, a cooling tube running along each of the opposite longitudinal edges of the web plate, and a cap member running along the edge of one of said cooling tubes, said cap member having a flat outer surface,
d. each of said block support elements having a manifold formed therein, the cooling tubes running between the manifolds of said block support elements,
e. means for circulating cooling fluid through said manifolds and said cooling tubes, and
f. a metal foil forming the anode bonded to the block support elements and the caps of said web elements in flat abutment thereagainst.

4,164,678

PLANAR AC PLASMA PANEL

Martin R. Biazzo, Holmdel, and George W. Dick, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 12, 1978, Ser. No. 914,359
Int. Cl.² H01J *61/30*
U.S. Cl. 313—220 **11 Claims**



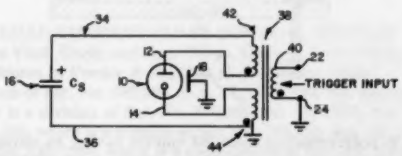
1. Display apparatus comprising
a body of ionizable gas,
a dielectric layer,
means for containing said gas adjacent to said dielectric layer,
at least first and second electrodes embedded in said layer at first and second levels therewithin, respectively, said second level being more proximate to said body of ionizable gas than said first level, and
a third electrode disposed in said layer at said second level directly above said first electrode and adjacent to said second electrode,
characterized in that said first and third electrodes are formed so as to provide substantial capacitive coupling therebetween.

4,164,679

STROBE LAMP SERIES TRIGGERING CIRCUIT

Arnold E. Hannahs, Springfield, and Michael D. Patrick, Urbana, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 27, 1978, Ser. No. 881,587
Int. Cl.² H05B *41/30*
U.S. Cl. 315—241 R **2 Claims**



1. A strobe lamp triggering and power supply arrangement for providing dependable strobe light output, comprising:
a strobe lamp having a pair of power electrodes for electric discharge therebetween to produce a strobe light output,
capacitor means, having a first and second power output, for providing a source of electrical energy for discharge through said strobe lamp, and
trigger means, connecting said capacitor means in series with said strobe lamp, for providing a trigger pulse simul-

taneously to each of said power electrodes of said strobe lamp, the polarity of the trigger pulse applied to one of said pair of power electrodes being opposite to the polarity of the trigger pulse applied to the other of said pair of power electrodes, said trigger means including

a pair of trigger input terminals,

a transformer having a primary winding, a first secondary winding and a second secondary winding, said primary winding being connected to said pair of trigger input terminals, and

means for connecting said first secondary winding between said first power output of said capacitor means and one of said pair of power electrodes of said strobe lamp, and for connecting said second secondary winding between said second power output of said capacitor means and the other of said power electrodes of said strobe lamp, said first and second secondary windings being connected such that said power electrodes of said strobe lamp will each receive simultaneously firing pulses of opposite polarity from said first secondary winding and said second secondary winding when said primary winding is energized,

whereby said strobe lamp will fire upon application of said trigger pulses to said power electrodes and said capacitor means will provide electrical energy for discharge through said lamp.

4,164,680

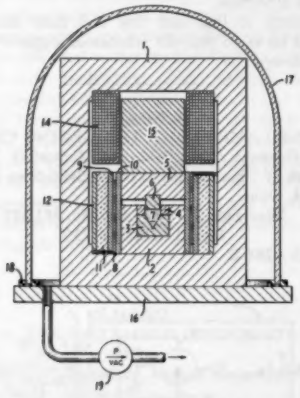
POLYCRYSTALLINE DIAMOND EMITTER

Humberto F. Villalobos, 55 Dartmouth Rd., Williams Bay, Wis. 53191

Continuation-in-part of Ser. No. 608,260, Aug. 27, 1975, Pat. No. 4,084,942. This application Nov. 16, 1977, Ser. No. 852,022

Int. Cl.² H01J *1/16, 1/14*

U.S. Cl. 313—336 **11 Claims**



1. A polycrystalline diamond emitter having an ultrasharp edge or point, said emitter comprising a multiplicity of diamond particles molecularly bonded together with the cohesion of natural diamond, all of said diamond particles being of a size less than 100 angstroms and being uniform in size within a range of 50 angstroms, said diamond particles being uniformly oriented to present like faces to said edge or point to define a uniform edge or point having a radius of from 3 to 100 angstroms, said emitter having at least in the portion forming said edge or point uniform inclusions of low work function metal.

4,164,681

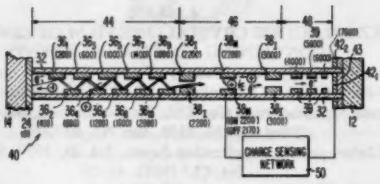
IMAGE DISPLAY DEVICE WITH ION FEEDBACK CONTROL AND METHOD OF OPERATING THE SAME

Carmen A. Catanese, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1976, Ser. No. 750,402

Int. Cl.² H01J *31/00, 43/00*

U.S. Cl. 313—400 **18 Claims**



1. A cathode device employing regenerative ion feedback, which comprises:

(a) an enclosure filled with inert gas;

(b) a cathode in said enclosure;

(c) an electron multiplier region in said enclosure, said electron multiplier region disposed to one side of said cathode;

(d) an ion interaction region in said enclosure, said region being positioned to one side of said electron multiplier region to receive the electron ouput therefrom; and

(e) means for dynamically controlling the magnitude of ion feedback to said cathode.

4,164,682

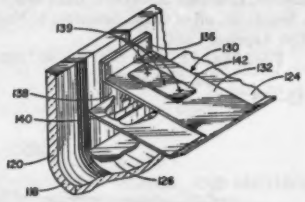
SHADOW MASK SUSPENSION SYSTEM HAVING BRACKET MEANS INTEGRALLY FORMED FROM THE SHADOW MASK ASSEMBLY

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 646,803, Jan. 5, 1976, abandoned. This application Sep. 28, 1977, Ser. No. 837,496

Int. Cl.² H01J *29/08*

U.S. Cl. 313—404 **2 Claims**



1. For use in a rectangular color cathode ray tube, of a type having a front panel with a rearward flange which mates with a funnel, a system for suspending an approximately rectangular shadow mask assembly on the rearward flange of the front panel at a predetermined spacing from a screen-bearing faceplate portion of the front panel, said system comprising a plurality of mask suspension devices spaced around the assembly, each comprising:

a metal stud embedded in said flange of said front panel so as to extend inwardly therefrom; and

mask-mounted means for retentively engaging said stud, comprising:

sheet metal bracket means formed integrally from said mask assembly and extending radially outward from said assembly in a direction substantially perpendicular to the axis of said assembly, said bracket having at its distal end a leg extending substantially parallel to said axis; and

a discrete metal leaf spring welded at one end to said leg

of said bracket means and having provision on its distal end for retentively engaging said stud;

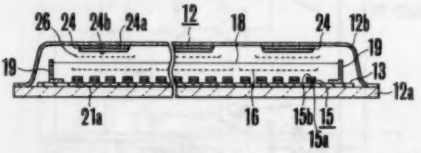
said mask-mounted means being characterized by having welded on said bracket means at least one flat strip composed of a material having a coefficient of thermal expansion which is significantly different from that of said bracket means and which is arranged on said bracket means and sized such that upon heating of said mask assembly, said bracket means bends out of its plane to effect a compensating adjustment in the spatial position of the mask assembly relative to the faceplate portion.

4,164,683

FLUORESCENT DISPLAY TUBE

Tadashi Nakamura, Ise; Mitsuru Masuda, Matsuzaka, and Hiroshi Tanaka, Takarazuka, all of Japan, assignors to ISE Electronics Corporation and Fujitsu Ten Limited, both of, Japan

Filed Jun. 21, 1978, Ser. No. 917,412
Claims priority, application Japan, Jun. 27, 1977, 52-76383
Int. Cl.[2] H01J *63/02, 63/04*
U.S. Cl. 313—496 7 Claims



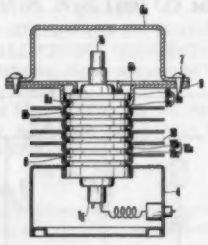
1. In a fluorescent display tube comprising a sealed envelope made up of spaced plates one of which being transparent, a first display unit formed on the inner surface of a plate opposing said transparent plates, said first display unit including a plurality of electrodes and phosphor films coated thereon, a cathode electrode for emitting thermal electrons, and drive means for selectively energizing said electrodes for causing said phosphor films to luminesce with said thermal electrons, the improvement which comprises a second display unit which includes a plurality of separately driven electrodes formed on the inner surface of said transparent plate and phosphor films coated on the last mentioned electrodes.

4,164,684

MAGNETRONS

Tomokatsu Oguro, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 30, 1977, Ser. No. 865,917
Claims priority, application Japan, Jan. 5, 1977, 52-61[U]
Int. Cl.[2] H01J *25/50*
U.S. Cl. 315—39.51 7 Claims



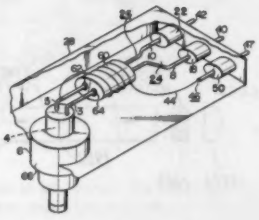
1. In a magnetron of the type comprising a cylindrical main body containing anode and cathode electrodes and permanent magnets, and component parts mounted on the periphery of said main body, the improvement wherein each of said component parts is provided with an annular member press fitted on said main body and having an inner diameter equal to or a little smaller than the outer diameter of said main body and said main body is provided with at least one, annular, circumferential groove around the outer periphery thereof for engagement with a portion of said annular member.

4,164,685

MAGNETRON DEVICE

Hirokazu Takahashi, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 13, 1977, Ser. No. 832,952
Claims priority, application Japan, Sep. 14, 1976, 51-110076
Int. Cl.[2] H05B *39/00, 41/14*
U.S. Cl. 315—105 12 Claims



1. A magnetron device comprising:

a magnetron body including an anode and a filament provided with first and second filament terminals;

first, second and third power supply terminals adapted to be connected to a power source;

first and second filament power supply lines for supplying current to the filament, the first power supply line being connected between the first filament terminal and the first power supply terminal and the second power supply line being connected between the second filament terminal and the second power supply terminal;

one anode power supply line connected between the third power supply terminal and one of the filament terminals for applying a predetermined voltage across the anode and the filament;

a filter device including a choking element and connected to the anode power supply line for reducing noises transmitted from the filament terminals; and

a shield box for receiving the filament terminals, the filter device and the power supply lines to shield electromagnetic waves which are emitted from the filament terminals and from the power supply lines, said power supply terminals being attached to said box.

4,164,686

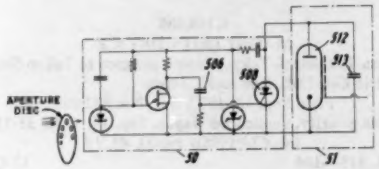
LOAD CURRENT PULSE CONTROL DEVICES

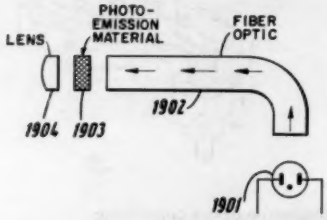
Zoltan Vital, Uccle, and Jean Orban, Clabecq, both of Belgium, assignors to Ponder & Best Inc., Los Angeles, Calif.

Division of Ser. No. 389,200, Aug. 17, 1973, Pat. No. 3,992,643, which is a division of Ser. No. 275,886, Jul. 27, 1972, Pat. No. 3,818,266, which is a division of Ser. No. 244,279, Apr. 14, 1972, Pat. No. 3,857,064, which is a continuation of Ser. No. 799,554, Feb. 13, 1969, abandoned. This application Aug. 22, 1975, Ser. No. 606,921
Claims priority, application Belgium, Feb. 13, 1968, 54471; Nov. 21, 1968, 66425; Dec. 27, 1968, 68017; Jan. 20, 1969, 68982
Int. Cl.[2] H05B *37/00*
U.S. Cl. 315—241 P 6 Claims

1. In a device for controlling the delivery of discharge current pulses from a storage capacitor to a flash tube in an electronic photoflash member, the device including an electronic switch connected with the flash tube for terminating the deliv-

ery of current to the flash tube, the improvement wherein said device comprises an integrator circuit, including a light sensor disposed to receive light produced by said flash tube, said integrator circuit being connected to produce a signal proportional to the time integral of the energy delivered to said flash tube by each such current pulse and to operate said electronic





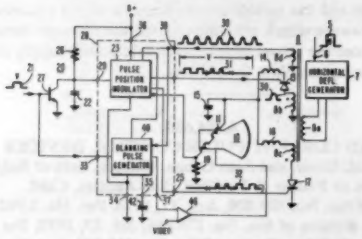
switch when such time integral reaches a predetermined value, and a manually adjustable optical element disposed in the path of light received by said sensor for varying the proportion of the light produced by said tube which is received by said sensor for causing the amplitude of the input signal delivered to said integrator circuit to be a predetermined proportion of the amplitude of the current delivered to said flash tube.

4,164,687

TELEVISION KINESCOPE PROTECTION CIRCUIT

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1978, Ser. No. 895,227
Int. Cl.[2] H01J *29/52*
U.S. Cl. 315—384 **7 Claims**



1. A kinescope protection circuit for a television deflection apparatus in which vertical deflection power is derived from horizontal deflection signals by integration, comprising:

blanking generator means coupled to a source of vertical synchronizing signals and to said kinescope, said blanking generator means including a monostable multivibrator having its input coupled to said source of vertical synchronizing signals for assuming the unstable state at the inception of each of said synchronizing signals, the output of said multivibrator being coupled to said kinescope for blanking during at least a portion of its unstable condition and for unblanking during its stable condition; and

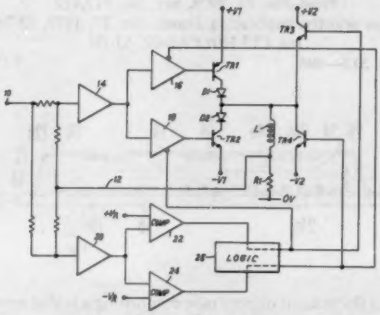
inhibiting means coupled to said source of horizontal deflection signals and to said multivibrator means for preventing said multivibrator from assuming its stable state except during the presence of said deflection signals.

4,164,688

DEFLECTION AMPLIFIER

Brian M. Cushing, Alton, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Sep. 21, 1977, Ser. No. 835,118
Claims priority, application United Kingdom, Oct. 4, 1976, 41023/76
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—389 **4 Claims**



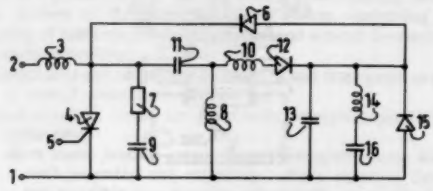
1. A deflection amplifier responsive to a command waveform and including a negative-feedback current control circuit operating between first voltage supply to supply current to and draw current from a deflection coil in dependence upon the command waveform, a feedback circuit for providing an error signal representing the difference between the commanded and actual currents, and a current switching circuit operating between second voltage supply rails having a higher potential difference therebetween than the first rails, and supplying current to and drawing current from the deflection coil, depending upon the sign of the error signal, when the magnitude of the error signal exceeds a threshold value.

4,164,689

SAW-TOOTH WAVE GENERATOR

Giuseppe Zappala, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Nov. 23, 1977, Ser. No. 854,278
Claims priority, application Italy, Dec. 7, 1976, 69912 A/76
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—408 **13 Claims**



1. A circuit arrangement for providing a deflection coil with a saw-tooth current having a cycle comprised of a trace and a retrace portion, comprising a first unidirectionally conductive

device connected parallel with said coil, a thyristor having a gate electrode operative to be connected to a source of pilot signals to render the thyristor conductive during a portion of each cycle of operation, a second unidirectionally conductive device connecting said coil and said first unidirectional conductive device to the thyristor, a branch circuit connected in parallel with the second unidirectionally conductive device and comprising a third unidirectionally conductive device connected in series with a capacitor, the second and third unidirectionally conductive devices being coupled to said coil in opposite polarity and means comprising means for forming a series resonant circuit with the aforesaid capacitor for quenching said thyristor prior to the completion of the trace portion of the sawtooth current operating cycle.

4,164,690

COMPACT MINIATURE FAN

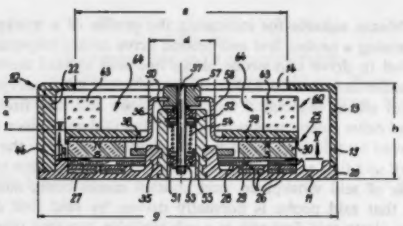
Rolf Müller, Ackerstrasse 13, St. Georgen, Schwarzw., and Günter Wrobel, Fürstenbergring 8, Villingen, both of Fed. Rep. of Germany

Filed Apr. 26, 1977, Ser. No. 790,928

Claims priority, application Switzerland, Apr. 27, 1976, 005294/76

Int. Cl.[2] H02K *29/00*

U.S. Cl. 318—254 **37 Claims**



1. A compact miniature fan, comprising an air-guidance housing of rectangular parallelepiped configuration having two opposite end walls and side walls, one of the end walls being provided with an air inflow-opening, one of the side walls being provided with an air outflow opening, the other of the end walls being comprised of a base plate; an electric motor of flat overall shape mounted within the housing, the motor comprising a rotor and a stator together defining a planar air gap, the stator including a magnetically conductive flux-return structure mounted on the base plate and a stator winding comprised of a plurality of flat coils mounted on the flux-return structure, the rotation axis of the rotor extending in the direction from one to the other of the end walls of the housing; and a radial fan wheel within the housing mounted on and coaxial with the rotor of the motor.

4,164,691

MULTIPHASE BRUSHLESS DC MOTOR USING TWO HALL-EFFECT GENERATORS

Kinzo Wada, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan

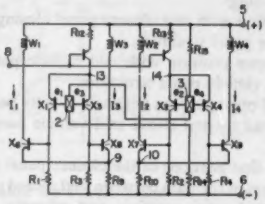
Filed Mar. 1, 1978, Ser. No. 882,084

Claims priority, application Japan, Mar. 3, 1977, 52-23109; May 19, 1977, 52-57917

Int. Cl.[2] H02K *29/00*

U.S. Cl. 318—254 **2 Claims**

1. A multiphase brushless DC motor including a permanent magnet rotor; first, second, third and fourth mutually electrically displaced stator windings; first and second Hall-effect generators associated with the stator windings having a pair of first and second Hall voltage electrodes and a pair of current supply electrodes through which current is supplied to effect generation of a Hall voltage at said Hall voltage electrodes in response to variations in magnetic field intensity due to the revolution of said rotor, said first and second Hall-effect generators being connected, in use, in a series circuit through said current supply electrodes between first and second terminals of voltage source; first, second, third and fourth switching transistors having their base electrodes respectively connected to the Hall-voltage electrodes of said Hall-effect generators to be responsive to the potential difference between the respective base and emitter electrodes; first, second, third and fourth power transistors of opposite conductivity type to that of said switching transistors for successively energizing said first, second, third and fourth windings respectively in response to the conduction of said first, second, third and fourth switching transistors; and means for supplying a current to said first, second, third and fourth switching transistors in response to a



control signal so as to control the currents supplied to said windings, said first and third switching transistors having their emitters connected together to define a first differential amplifier and said second and fourth transistors having their emitters connected together to define a second differential amplifier; said control current supplying means comprising a first and a second current control transistor of the same conductivity type as that of said switching transistors, said first current control transistor being connected in a series circuit with said first and third switching transistors, and said second current control transistor being connected in a series circuit with said second and fourth switching transistors, the base electrodes of said current control transistors being connected to be responsive to said control signal to respectively regulate the currents supplied to said differential amplifiers.

4,164,692

OPERATING MECHANISM FOR A PIVOTABLE SLIDING PANEL

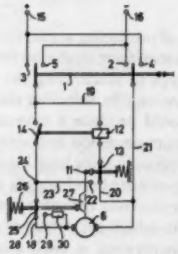
Erik Mitterer, Stockdorf, and Alfons Lutz, Emmering, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Jan. 30, 1978, Ser. No. 873,527

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704899

Int. Cl.[2] H02P *5/06*

U.S. Cl. 318—266 **12 Claims**



1. Control apparatus for an electromechanically operated closure panel such as used for sunroofs of automobiles and the like; said control apparatus comprising:

an electric motor,

transmission means drivingly interconnecting said electric motor and a closure panel for moving said closure panel along a closure panel path between a plurality of respective predetermined positions,

and control means for operating said electric motor at a first motor speed for moving said closure panel along first portions of the closure panel path and at a second motor speed for moving said closure panel along second portions of the closure panel path, said second motor speed being substantially slower than said first motor speed to accommodate optimum control of the movement of said closure panel along said second portions of the closure panel path,

wherein the closure panel is a pivotable sliding panel with the respective predetermined positions of the closure panel including:

a closed position with said closure panel closing an opening in a vehicle panel structure,

a retracted open position with said closure panel disposed under said vehicle panel structure,

and a pivoted open position with said closure panel disposed with one end thereof above said vehicle panel structure, and

wherein said first portions of the closure panel path include at least a part of the path between said closed positions and said retracted open position, and wherein said second portions of the closure panel path include at least a part of the path between said closed position and said pivoted open position.

4,164,693

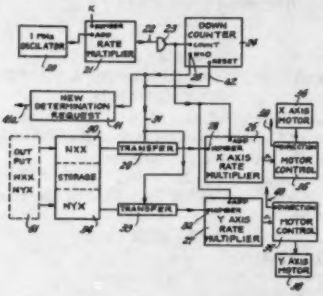
METHOD AND SYSTEM FOR PRODUCING LINEAR CONTOURING MOVEMENT

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 30, 1974, Ser. No. 474,672

Int. Cl.² G05B *19/24*

U.S. Cl. 318—573 **25 Claims**



1. The method of producing actual relative movement along two axes within a maximum deviation from a commanded path comprising the steps of subdividing the movement into a plurality of successive lengths, selecting the extent of each length to that which would produce a movement which would be within the maximum deviation and which also has a relationship with its immediately prior length and producing a relative movement for the extent of each length with the movement for each length occurring over the same constant time interval for each length and in which the extent of each length is defined by a number of increments on each axis, the step of selecting normally selects each length to have an extent consisting of a plurality of increments on each axis and in which the selecting relationship causes a selected length to be no more than a set number of increments different from the immediately prior length.

4,164,694

MEANS FOR INDICATING THE PROFILE OF A WORKPIECE

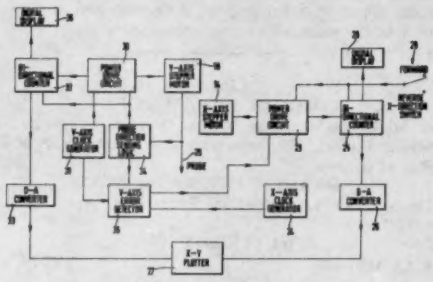
Clifford R. Amsbury, King's Newton, and Eric Warren, Etwall, both of England, assignors to Rolls-Royce Limited, London, England

Filed Sep. 15, 1977, Ser. No. 833,655

Claims priority, application United Kingdom, Sep. 25, 1976, 39925/76

Int. Cl.² G05B *19/36*

U.S. Cl. 318—578 **5 Claims**



1. Means suitable for indicating the profile of a workpiece comprising a probe, first and second drive means respectively adapted to drive said probe along first and second mutually perpendicular axes to follow the profile of said workpiece, control means associated with said probe and said first and second drive means, means for supporting said workpiece to be followed by said probe and means adapted to display the outputs of said first and second drive means as an indication of the profile of said workpiece, said control means being adapted such that said probe is normally driven by said first drive means along said first axis at a substantially constant rate and that said second drive means drives said probe along said second axis to alternately make and break contact with said workpiece, said control means being arranged such that if the distance traversed by the probe along said second axis after a making but before a breaking of contact, or after a breaking but before a succeeding making of contact of said probe with said workpiece exceeds a predetermined limit, said first drive means is slowed down or halted until the succeeding making or breaking of contact respectively occurs whereupon said first drive means is restored to said constant drive rate.

4,164,695

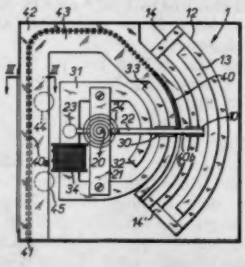
SERVO CONTROLLED TAPE INDICATING DEVICE

Louis Sacré, Paris, France, assignor to Societe D'Electricite Mors, Le Blanc-Mesnil, France

Filed Mar. 28, 1977, Ser. No. 781,998

Int. Cl.² G08B *5/00*

U.S. Cl. 318—653 **15 Claims**



1. A servo controlled strip or tape linear indicating device

comprising a flexible indicator strip or tape disposed adjacent a reference indicia, servo motor means for displacing said indicator strip or tape with respect to said reference indicia in response to an actuating signal which is the difference between an input signal and an output signal from position sensing means associated with said strip or tape and responsive to the position of said strip or tape, wherein the improvement comprises:

(a) said servo motor means including a movable coil displaceable in an air gap of a magnetic circuit having fixed pole pieces;

(b) attachment means connected to said tape or strip at a single fixed location and to said servo motor means, said tape or strip having at least one free end;

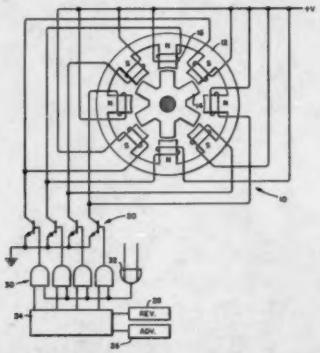
(c) said strip or tape being substantially nonresilient and nonself-supporting and freely slidable in and guided along its entire length in all position thereof by stationary guide channel means of substantially closed cross-section having at least a transparent portion for viewing said strip or tape opposite said reference indicia, the edges of said strip or tape defining with said guide channel means sufficiently small lateral play for preventing bunching or twisting of said strip or tape.

4,164,696

STEPPING MOTOR EXCITATION

William C. Kastilahn, Evanston, and Leopold von Braun, Chicago, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Aug. 10, 1977, Ser. No. 823,309
Int. Cl.² H02K 37/00
U.S. Cl. 318—696 **5 Claims**



1. A method for advancing a stepping motor having a rotor and having a stator wound for two-phase excitation and for inverse-polarity transformer coupling between successive poles and having a circuit for exciting the stepping motor with single-phase signals having a first power level and for exciting the stepping motor with single-phase signals having a second power level, substantially less than the first power level, comprising the steps of:

(1) exciting the stepping motor with the second power level signals;

(2) exciting the stepping motor with the first power level signals immediately prior to advancing the excitation of the stepping motor from one pole to a successive pole; and

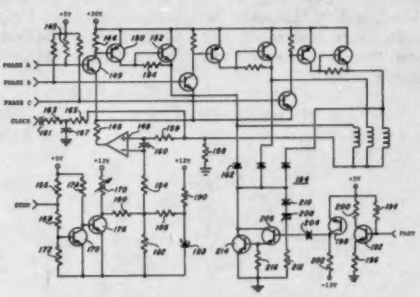
(3) after a time commensurate with the time of transition from the second power level to the first power level advancing the stepping motor excitation from the one pole to the successive pole, thereby rotating the rotor.

4,164,697

METHOD AND SYSTEM FOR SQUELCHING DECAYING CURRENT IN MOTOR PHASES

Mickey H. Everett, Leander, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 8, 1976, Ser. No. 675,039
Int. Cl.² G05B 19/40
U.S. Cl. 318—696 **10 Claims**



1. A controller for a multi-phase stepper motor comprising:

(a) regulator means for controlling the current flowing in enabled phases of said motor, including a feedback path having a current sensing resistor,

(b) enabling means for stepping said motor by selectively enabling phases of said motor, and

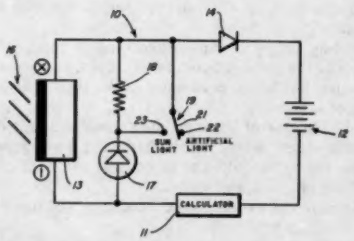
(c) means for controlling the decaying current in a disabled motor phase, said means having a first state when said phase is enabled and being switchable to a second state to provide a high resistance path, including the current sensing resistor when said phase is disabled.

4,164,698

BATTERY CHARGING CIRCUIT

Heinz Kleeberg, Nuremberg, Fed. Rep. of Germany, assignor to Triumph Werke Nurnberg, A.G., Nuremberg, Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,735
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651863
Int. Cl.² H02J 7/04
U.S. Cl. 320—2 **3 Claims**



1. A circuit for supplying a charging current to a battery in a current utilizing device, the circuit comprising:

a solar cell for converting light energy into a charging current,

means including a diode for coupling said charging current to said battery,

a Zener diode for limiting the level of charging current coupled to said battery,

a resistor in series with said Zener diode for limiting charging current drawn by said Zener diode during periods of low illumination, and

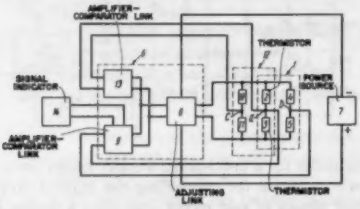
a switch in parallel with said resistor, whereby said switch is operative to selectively shunt said resistor during periods of high illumination.

4,164,699

THERMOCHEMICAL COMBUSTIBLE GAS DETECTOR

Alexandr T. Timoshenko, Makeevka Donetskoi oblasti; Vladimir I. Nazarenko, Donetsk; Felix E. Krigman, and Mikhail G. Gusev, both of Makeevka Donetskoi oblasti, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Po Bezopasnosti Rabot V Gornoi Promyshlennosti, Makeevka Donetskoi oblasti, U.S.S.R.

Filed Feb. 9, 1976, Ser. No. 656,826
Int. Cl.[2] G01N *25/32*
U.S. Cl. 323—75 A **3 Claims**



1. A thermochemical combustible gas detector comprising:
a resistor bridge having a first arm including a thermistor sensitive to combustible gases,
a second arm adjacent to said first arm, said second arm including a thermistor for compensating the effect of unmeasured parameters and components of the atmosphere upon said sensitive resistor,
a third arm and a fourth arm, each including a conventional resistor;
an additional resistor bridge having one arm including a conventional auxiliary resistor,
a second arm including another conventional auxiliary resistor,
the third and fourth arms of said additional bridge forming said sensitive and compensating thermistors of said first resistor bridge;
a compensating voltage stabilizer comprising:
an amplifier-comparator link with input connected to the measuring diagonal of said resistor bridge,
an auxiliary amplifier-comparator link with input connected to the measuring diagonal of said additional resistor bridge,
an adjusting link with input connected in parallel to each output of the amplifier-comparator links, an output of said adjusting link being connected to the supply diagonal of both of said bridges;
a signal indicator of impermissible concentrations of combustible gases in the atmosphere and having an input connected to the output of any of said amplifier-comparator links of said stabilizer;
a power source connected to said stabilizer and signal indicator.

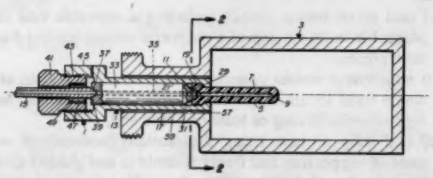
4,164,700

HIGH PRESSURE APPARATUS FOR MICROWAVE RESONANCE SPECTROSCOPY

Charles W. Christoe, Flanders, and Frank J. Owens, Little Falls, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1978, Ser. No. 903,630
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—0.5 AH **6 Claims**

1. Apparatus for microwave resonance spectroscopy, comprising:
a microwave cavity resonator, adapted to be excited to establish a microwave electric field in a given direction therein, and having an access opening in one side thereof;
an elongated dielectric tube, closed at one end and open at the other end, and having an outer diameter at least equal to five times its inner diameter, partially disposed in said cavity resonator with its closed end portion extending through said access opening transverse to said field direc-



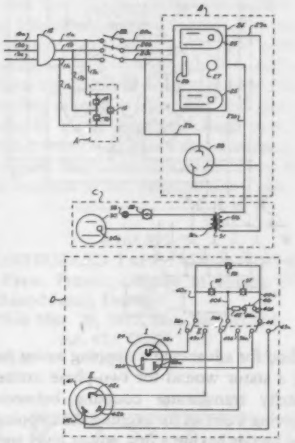
tion; said tube being capable of withstanding a high internal fluid pressure of at least 2000 atmospheres and having a dielectric constant not greater that 4;
a sample material, having pressure-dependent spectral lines, filling said tube; and
high pressure means for connecting said open end of said tube to a source of said high fluid pressure, for pressurizing said sample material.

4,164,701

PORTABLE DEVICE FOR TESTING ELECTRICAL WIRING CIRCUITS AND POWER TOOLS AND EQUIPMENT

Charles P. Gulledge, Rte. 9, Box 254, Carrollton, Ga. 30117; Lloyd M. Austin, Rte. 6, Box 374, Carrollton, Ga. 30117, and James B. Stephens, 429 N. Main St., Greenville, S.C. 29602

Filed Sep. 6, 1977, Ser. No. 830,418
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **6 Claims**



1. A portable electrical testing device for testing electrical wiring circuits in power tools and equipment which operate from an outside electrical source supplied by a line, neutral, and ground conductor wire, said device comprising:
a three-conductor wire power cord having a three-prong plug for connecting said device to a three-socket receptacle of said outside electrical source;
a first test station having indicator means electrically connected to the conductors of said power cord for indicating the wiring polarity condition of said outside receptacle;
a second testing station electrically connected to said first station having a three-socket receptacle for receiving a

three-prong plug of a cable of the power tool and equipment being tested;

said second station including a ground fault device having a test circuit connected to said receptacle which includes a fault indicator for indicating the existence of a defective circuit in said power tool and equipment;

a third test station having a three-socket receptacle for receiving said plug of said power tool being tested, said third test station including circuit means connected to said third station receptacle for indicating the continuity of a ground circuit in said power tool;

a fourth test station for testing the proper wiring of a three-wire extension power cable having a three-prong plug carried on one end and a three-socket receptacle carried on the other end thereof with line, neutral, and ground conductors connected therebetween;

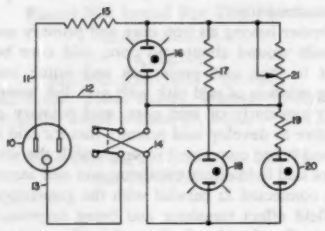
said fourth station including a testing circuit having a plug which includes a line wire prong, neutral wire prong, and a ground wire prong for receiving said power cable receptacle while said power cable plug is inserted into the receptacle of said second test station, said extension power cable being connected between said fourth and second stations during testing assuring proper line polarity and facilitating detecting of the reversal of conductors of said extension power cable, said test circuit including indicator means electrically connected to said prongs of said plug of said fourth station for indicating the wiring polarity condition of said power extension cable and

said fourth test station including a second testing circuit for detecting reversal of the neutral and ground conductors in said power cable which includes an impedance load and switch means connected across said neutral and ground prongs, closure of said switch means producing a fault sufficient to cause said fault indicator to trip when said neutral and ground conductors are reversed.

4,164,702
APPARATUS TO TEST PROPER WIRING OF ELECTRICAL WALL RECEPTACLES ESPECIALLY IF THE GROUND AND NEUTRAL WIRES ARE REVERSED WITH RESPECT TO THE HOT WIRE

Eugene F. Pereda, 11621 Hughes NE., Albuquerque, N. Mex. 87112

Continuation of Ser. No. 744,085, Nov. 22, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 841,071
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **1 Claim**

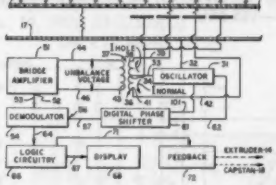


1. Apparatus for testing the correct wiring of a wall socket having hot, neutral and ground terminals, including testing for ground and neutral reversal, comprising: a male plug having three prongs for contact with the hot, neutral and ground terminals of said wall socket, respectively, a double-pole, double-throw reversing switch having first and second poles and first and second pairs of stationary contacts, said first pair of stationary contacts comprising first and second contacts constituting one side of said switch and engageable by said first and second poles respectively in a first switch position, said second pair of stationary contacts comprising third and fourth contacts constituting the opposite side of said switch and engageable by said first and second poles respectively in a second, opposite position of said switch, said first contact being diagonally opposite the fourth contact and said second contact being diagonally opposite the third contact, a first conductor connecting together said first and fourth diagonally opposite contacts, a second conductor connecting together said second and third diagonally opposite contacts, the neutral prong of said plug being connected to the first pole of said switch and the ground prong being connected to the second pole of said switch; first neon lamp means; means connecting said first neon lamp means across the third and fourth stationary contacts; second neon lamp means; means connecting said second neon lamp means between the fourth stationary contact and a junction point; third neon lamp means; means connecting said third neon lamp means between the third stationary contact and the junction point; variable resistance means connected between said third stationary contact and said junction point; and means connecting said hot prong of the plug to said junction point; whereby when said plug is inserted into a three terminal walls socket having a higher resistance wire for the ground than for the neutral if correctly wired, in order to test for reversal of said neutral and ground wire connections, the double-pole, double-throw switch is placed in its first position connecting the first lamp across the hot and ground prongs and the second lamp across the hot and neutral prongs, the variable resistance is adjusted to bring the second lamp to a condition of energization just prior to extinction and the switch is then placed in its opposite position, thus reversing the neutral and ground prong connections, whereupon if the neutral and ground wire socket connections are not reversed the second lamp will be extinguished.

4,164,703
METHODS OF AND APPARATUS FOR DETECTING OPENINGS IN CABLE JACKETS

Luther M. Boggs, Dunwoody, and James A. Hudson, Jr., Atlanta, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,252
Int. Cl.[2] G01R *31/14, 31/02*
U.S. Cl. 324—54 **12 Claims**



1. A method of detecting openings in a cable jacket, which includes the steps of:

sensing conductance across a plastic jacket of each of a first pair of adjacent sections of a cable which includes a core having a plurality of individually insulated electrical conductors, said core being enclosed in the plastic jacket;

sensing conductance across the plastic jacket of each of a second pair of adjacent sections of the cable in which one of the adjacent sections of the second pair is common to the first pair;

detecting any conductance unbalance that exists between the first and second pairs of cable sections; and

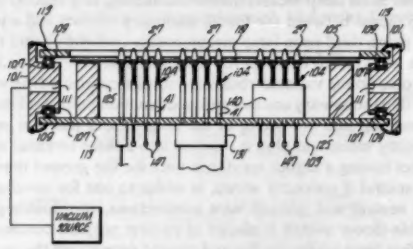
measuring the magnitude of the conductance unbalance to determine the integrity of the cable jacket.

4,164,704

PLURAL PROBE CIRCUIT CARD FIXTURE USING A VACUUM COLLAPSED MEMBRANE TO HOLD THE CARD AGAINST THE PROBES

Makoto Kato, Santa Ana; Larry N. Velie, El Toro, and John L. Baverstock, Long Beach, all of Calif., assignors to Metropolitan Circuits, Inc., Costa Mesa, Calif.

Filed Nov. 1, 1976, Ser. No. 737,343
Int. Cl.[2] G01R *15/12, 31/02*
U.S. Cl. 324—73 PC 4 Claims



1. In an electrical circuit card testing fixture including a chamber including a lower surface bearing a plurality of test probes, and an upper surface for bearing a circuit card under test, the structure comprising:

an opening in said upper surface located over the area of said test probes;

a thin, flexible plastic sheet located in said opening and having a plurality of apertures; each one of at least a majority of said test probes being inserted into and penetrating through one of said apertures whereby a positioning of said test probes is stabilized, and

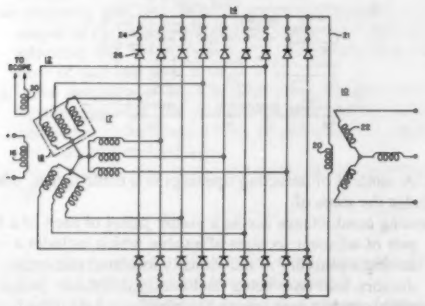
a plastic sealing membrane for covering a circuit card under test placed over said opening and responsive to evacuation of said chamber to collapse around said circuit card to hold said circuit card in test position.

4,164,705

BRUSHLESS EXCITER FAULT INDICATOR SYSTEM

Eugene C. Whitney, Pittsburgh, and Dale I. Gorden, North Versailles, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1976, Ser. No. 680,658
Int. Cl.[2] G01R *31/22, 31/02;* H02K *11/00*
U.S. Cl. 324—158 MG 5 Claims



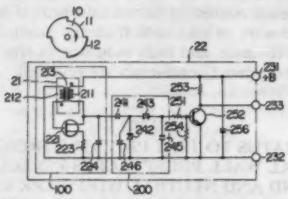
1. In a synchronous dynamoelectric machine with brushless excitation, the combination comprising: a main machine rotor member having field coils connected together to form a main rotor field winding, an alternating current exciter having a stator field member and a plurality of salient stator poles thereon, stator field coils disposed on said salient poles and connected together to form a stator exciter field winding, an exciter armature member rotatable with said main rotor field winding and having an armature winding thereon, said exciter armature winding being coupled magnetically with said exciter stator field winding for developing an alternating current excitation signal within said armature winding, rectifier means interconnecting said exciter armature winding and said main rotor field winding to provide direct current excitation to said main rotor field winding, said rectifier means being rotatable with said armature, a sensing coil disposed around a selected one of said salient stator poles of said exciter for developing an alternating electrical signal in response to changes in the magnetic flux wave linking said rotating exciter armature member and the field coil of said selected salient pole, including changes due to faults in said armature winding and in said rectifier means, and means connected to said sensing coil to indicate variations in said alternating electrical signal.

4,164,706

ROTATIONAL POSITION DETECTOR UTILIZING AN FET BLOCKING OSCILLATOR

Sigeyuki Akita, Aichi, and Junji Kitagawa, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 26, 1977, Ser. No. 828,106
Claims priority, application Japan, Oct. 18, 1976, 51-125285; Jan. 10, 1977, 52-1868[U]; Jan. 13, 1977, 52-2954[U]
Int. Cl.[2] G01B *7/00*
U.S. Cl. 324—208 5 Claims



1. A rotation detecting apparatus comprising:

a rotor disk having at least one projection and adjacent notch provided circularly along the periphery thereof with at least the projection being electrically conductive for having induced in it by a primary magnetic flux an eddy current which produces a counter magnetic flux;

a field effect transistor having a source-drain path and a gate-source path;

a transformer having an iron core and primary and secondary coils wound about said core, said core being positioned to face said projection and notch successively during rotation of said disk with said disk being disposed totally exteriorly of said core, said primary coil being operative to develop said primary flux for said secondary coil and being connected in series with the source-drain path of said field effect transistor, and said secondary coil being connected in parallel with the gate-source path of said field effect transistor and being responsive to said primary flux for developing a bias for said gate-source path,

means forming a blocking oscillator including said transformer and said field effect transistor for generating a train of oscillation signals only while a said notch faces said transformer core during the rotation of said rotor disk to allow said secondary coil to be responsive to said primary flux to start said train of oscillation signals, said counter magnetic flux being produced only while a said projection faces said transformer core and then being operative to substantially cancel said primary flux for substantially reducing said bias and stopping said oscillation train; and

output circuit means connected to said blocking oscillator and responsive to the presence and absence of said oscilla-

tion signal train for generating a pulse signal whose signal level changes in synchronization with the starting and stopping of said train of oscillation signals.

4,164,707

MAGNETIC THICKNESS GAUGE OF THE MAGNET ADHESION TYPE USING DRIVE MEANS WITH A GOVERNOR TO RAISE THE MAGNET

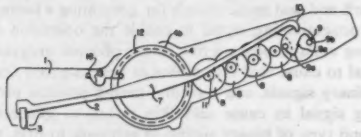
Norbert Nix, Robert Perthel Str. 2-4, 5000 Cologne 60, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,842

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629505; Jun. 30, 1976, 7620765

Int. Cl.[2] G01B 7/06

U.S. Cl. 324—230 9 Claims



1. In a device for measuring the thickness of non-magnetic layers on magnetic substrates by determining the adhesion of a magnet in contact with the layer, the device comprising a housing, a scale balance carrying the magnet at one end thereof the scale balance being mounted rotatably about an axis within said housing, a manually rotatably scale disk and a first spiral spring means connected to the scale balance at one end and to the scale disk at the other end such that rotation of the scale disk causes rotation of the scale balance the scale disk and the first spiral spring means being coaxial with the scale balance axis, the improvement comprising drive means for rotating said scale disk including a second spiral spring means having one end attached to the housing and the other end attached to the scale disk the second spiral spring means being coaxial with the scale balance axis, the spring tension of the second spiral spring means being slightly greater than that of the first spiral spring means and counteracts the first spiral spring means, a governor means for controlling the rotational speed of the scale disk and a pawl means formed on the scale balance, said pawl means engaging the drive means thereby blocking the further rotation of the scale disk upon raising the magnet from the non-magnetic layer.

4,164,708

Patent Not Issued For This Number

4,164,709

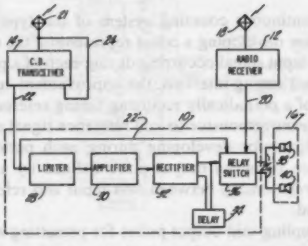
SIGNAL PRIORITY DEVICE

Herbert E. Tudor, 21044 Sunset, Warren, Mich. 48091, and Frank F. Hrlic, 31130 Walden Ct. #102, Walled Lake, Mich. 48088

Filed Jun. 22, 1977, Ser. No. 808,718

Int. Cl.[2] H04B 1/40

U.S. Cl. 325—21 14 Claims



1. A communication system comprising:

means for generating a first electrical signal at a speaker output terminal;

a transceiver for generating a second electrical signal indicative of an audio output at a speaker output terminal;

at least one speaker for converting said first and second electrical signals to an audio output; and

signal priority means interconnecting the output terminals of said means for generating and said transceiver with said at least one speaker, said signal priority means receiving said first and second electrical signals, said signal priority means having a first state transmitting said first electrical signals to said at least one speaker, and switchable to a second state in response to said second signal, said signal priority means transmitting said second signal to said same at least one speaker;

wherein said signal priority means further includes delay means for holding said signal priority means in said second state for a predetermined time after the termination of said second electrical signal; and

wherein said priority means comprises:

limiter means receiving said second electrical signal for generating a limited output signal having a predetermined value;

amplifier means for amplifying said limited output signal, to generate an amplified signal;

rectifier means for rectifying said amplified signal to generate a rectified signal indicative of the value of said amplified signal;

delay means, receiving said rectified signal, for generating a delay signal for a predetermined time after the termination of said second signal; and

switch means receiving said first and second electrical signals, said switch means having a first state outputting said first signal to said at least one speaker, said switch means switchable to a second state in response to said rectified and delay signals, said switch means in said second state outputting said second signal to said same at least one speaker.

4,164,710

VERY HIGH FREQUENCY TUNER FOR ELIMINATING IMAGE INTERFERENCE AND STRAY CAPACITANCE EFFECTS

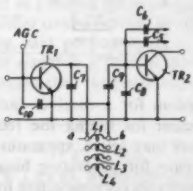
Shigemitsu Minou, Neyagawa, and Shuhei Kamada, Tsuzuki, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 7, 1977, Ser. No. 775,406

Claims priority, application Japan, Mar. 5, 1976, 51-26507[U]; Mar. 15, 1976, 51-32505[U]

Int. Cl.[2] H04B 1/10

U.S. Cl. 325—464 4 Claims



1. A very high frequency tuner for selecting one of a plurality of broadcasting signals, comprising

high frequency amplifying transistor means of an automatic gain control type for amplifying a high frequency signal, said high frequency amplifying transistor means having a stray capacitance at the output thereof, said high frequency amplifying means being connected to receive an automatic gain control signal,

tuned coupling means coupled to said high frequency amplifying transistor means for selectively withddrawing a

tuned high frequency signal, said coupling means including a plurality of inductance coil means and mechanical switching means for coupling a selected one of said inductive coil means into said coupling means,

local oscillating means for providing an oscillation frequency signal the frequency of which is different by a given frequency difference from said selectively withdrawn tuned high frequency signal,

mixing means responsive to said tuned high frequency signal from said tuned coupling means and said local oscillation frequency from said local oscillating means for providing an intermediate frequency signal,

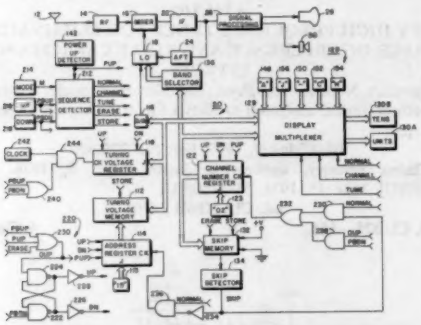
said tuned coupling means comprising a πtype single tuned coupling circuit means for preventing image interference and for reducing the effect of the stray capacitance of said amplifying transistor means, said coupling circuit means comprising said mechanically selected inductance coil means connected in series between the output of said high frequency amplifying transistor means and the input of said mixing means, first capacitor means connected to the input terminal of said inductance coil means in a shunt manner and a second capacitor means connected to the output terminal of said inductance coil means in a shunt manner, said stray capacitance of said high frequency amplifying transistor means being shunted by said first capacitor means.

4,164,711

TUNING SYSTEM INCLUDING A MEMORY FOR STORING TUNING INFORMATION WITH USER CONTROLS ARRANGED TO FACILITATE ITS PROGRAMMING

Steven A. Steckler, Clark, and Alvin R. Balaban, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,412
Int. Cl.² H04B *1/26*
U.S. Cl. 325—464 **8 Claims**



1. In a tuning system for a receiver including a voltage variable tuning element for tuning the receiver to various tuning positions a user may select, apparatus comprising:

tuning voltage means for generating binary signals representing tuning voltages corresponding to said tuning positions for controlling said voltage variable tuning element;

first memory means including a plurality of memory locations for storing the binary signals representing said tuning voltages;

converter means for converting the binary signals representing said tuning voltages to said tuning voltages, said tuning voltages being coupled to said tuning element;

skip means for generating binary signals of first and second types representing preferred and nonpreferred conditions, respectively, of said tuning positions;

second memory means including a plurality of memory locations for storing the binary signals generated by said skip means;

tuning position selection means including at least a first direction switch means for outputting the binary signals stored in the memory locations of said first and second memory locations, the binary signals stored in ones of said memory locations of said first memory means normally being outputted only when said first type of binary signal is stored in ones of said memory locations of said second memory means corrresponding to the same tuning positions, the binary signals outputted from memory locations of said first memory means being coupled to said converter means;

mode switch means; and

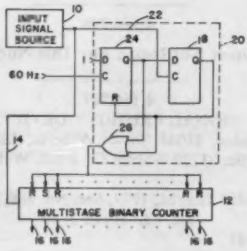
sequence detection means coupled to said first direction switch and said mode switch for generating a tuning voltage programming signal to enable the operation of said tuning voltage means, a first tuning position programming signal to cause said skip means to generate said first type of binary signals, and a second tuning position programming signal to cause said skip means to generate said second type of binary signals in response to first, second and third operational sequences, respectively, of said mode switch and said first direction switch.

4,164,712

CONTINUOUS COUNTING SYSTEM

Johnny Collins, Oak Park, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 14, 1977, Ser. No. 850,867
Int. Cl.² H03K *21/36*
U.S. Cl. 328—48 **7 Claims**



1. In a continuous counting system of the type having a binary counter developing a count representing the number of cycles of an input signal occurring during each of a plurality of predetermined timing intervals, the improvement comprising:

a source of a periodically recurring timing reference signal;

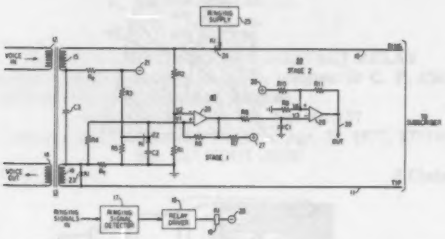
control means responsive to said reference signal and to said input signal for developing during each period of said reference signal an output pulse defined by a predetermined relationship between said input and reference signals; and

means coupling said output pulses for presetting said binary counter to a count dependent upon said predetermined relationship.

4,164,713
DUAL MODE TELEPHONE SUBSCRIBER LOOP CURRENT DETECTOR

Stephen J. Brolin, Livingston; Richard J. Lisco, Whippany, and Mark T. Manfred, Rockaway, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 763,288, Jan. 28, 1977, Pat. No. 4,087,646.
This application Oct. 25, 1977, Ser. No. 845,069
Int. Cl.[2] H03K *5/153, 5/01*
U.S. Cl. 328—111 2 Claims



1. A threshold detector comprising

a first voltage comparator including first and second input terminals and a first output terminal, said comparator being responsive to voltages at said first input terminal exceeding the voltage at said second input terminal for producing a first output voltage at said first output terminal,

said first voltage comparator including a first feedback circuit connected from said first output terminal to said second input terminal,

a capacitive timing circuit connected to said first output terminal of said first voltage comparator, and

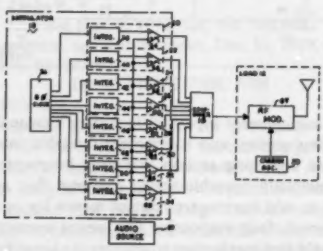
a second voltage comparator including a third and a fourth input terminal and a second output terminal, said comparator being responsive to the output of said timing circuit connected to said third input terminal exceeding a second threshold voltage at said fourth input terminal for producing a second output voltage at said second output terminal,

said second voltage comparator including a second feedback circuit connected from said second output terminal to said fourth input terminal.

4,164,714
POLYPHASE PDM AMPLIFIER

Hilmer I. Swanson, Quincy, Ill., assignor to Harris Corporation, Cleveland, Ohio

Filed Sep. 26, 1977, Ser. No. 836,832
Int. Cl.[2] H03F *3/38*
U.S. Cl. 330—10 25 Claims



1. An amplifier for providing high fidelity amplification of an amplitude and frequency varying input signal, comprising:

means for providing said amplitude and frequency varying input signal;

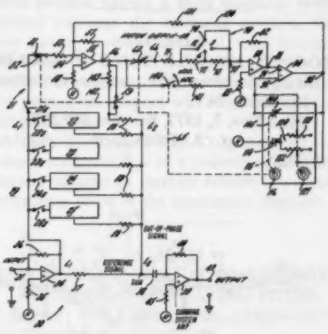
means responsive to said signal for converting said signal into a plurality of pulse trains of like polarity and frequency, but differing in phase from one another by a fixed amount, with the pulses of each said pulse train havng a characteristic which varies in a like manner with variations in said input signal; and,

means for combining said plurality of pulse trains into a composite signal of increased magnitude and of substantially the same waveform as said amplitude and frequency varying input signal whereby high fidelity amplification of said amplitude and frequency varying input signal is provided.

4,164,715
FEEDBACK ELIMINATION SYSTEM EMPLOYING NOTCH FILTER

George R. Thurmond, 4709 Shoalwood, Austin, Tex. 78756

Division of Ser. No. 756,135, Jan. 3, 1977, Pat. No. 4,088,834.
This application Mar. 2, 1978, Ser. No. 882,638
Int. Cl.[2] H03F *1/34*
U.S. Cl. 330—85 4 Claims



1. In a notch filter, the combination comprising a filter amplifier having a bridged T feedback path for providing a bandpass characteristic thereto, said feedback path having adjustment means for establishing the bandwidth and independent adjustment means for setting the center frequency of the pass band, a summing amplifier having an input signal coupled thereto and a negative feedback path for establishing the gain thereof, means connecting the output of the summing amplifier to the input of the filter amplifier, and means feeding a portion of the output signal of the filter amplifier to the input of the summing amplifier as positive feedback to increase the gain of the summing amplifier over a portion only of the bandwidth of the filter amplifier, said portion being on the order of 1/20 octave, thereby to establish a peak at the output of the summing amplifier sharper than the pass characteristic of the filter amplifier.

4,164,716
CLOCK LEVEL SHIFTING CIRCUIT

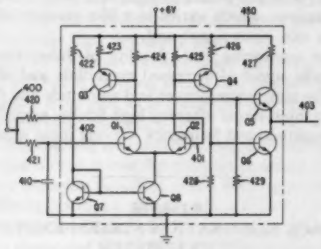
George I. Dague, North Andover, Mass., and Lawrence E. Murphy, Matawan, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 22, 1978, Ser. No. 908,284
Int. Cl.[2] H03F *3/45*
U.S. Cl. 330—252 7 Claims

1. In combination with a multistage differential amplifier, having a differential pair of NPN transistors (Q_1, Q_2) in the first stage and a pair of PNP current sources (Q_3, 423, 424-Q_4, 425, 426) in the second stage, for amplifying the voltage difference between two input terminals without feedback to either of the input terminals, a circuit characterized essentially by:

a first impedance network connecting an input signal to one of the input terminals;

a second impedance network, structurally identical to said first impedance network, connecting said input signal to



the other input terminal in a manner identical to the first impedance network; and

a capacitor connecting one of the input terminals to signal ground, said impedance networks and said capacitor comprising the sole connections to the input terminals.

4,164,717

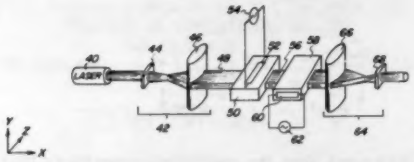
ACOUSTOOPTIC MODULATION AND DEFLECTION

Richard N. Blazey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1977, Ser. No. 849,375

Int. Cl.[2] H01S *3/10*

U.S. Cl. 332—7.51 **6 Claims**



1. Apparatus for intensity-modulating and angularly-deflecting a beam of monochromatic radiation, said apparatus comprising:

(a) optical means for spreading the beam to form a sheet beam having, in a plane normal to the beam, predetermined orthogonal major and minor axes;

(b) first means for propagating an acoustic wave of varying amplitude through said sheet beam in a direction substantially parallel to said minor axis to intensity-modulate said sheet beam; and

(c) second means for propagating a variable frequency acoustic wave through said sheet beam in a direction substantially parallel to said major axis to angularly deflect said sheet beam, said first and second propagating means being spaced apart without any beam-shaping optical elements positioned therebetween.

4,164,718

ELECTROMAGNETIC POWER ABSORBER

Richard S. Iwasaki, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

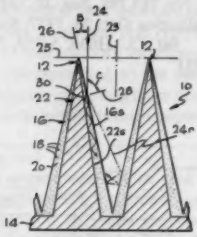
Continuation of Ser. No. 703,905, Jul. 9, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 834,257

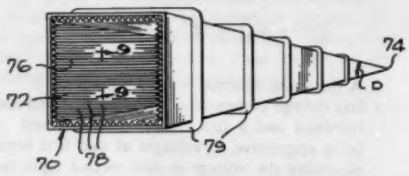
Int. Cl.[2] H01P *1/22*

U.S. Cl. 333—81 R **8 Claims**

1. A power absorber for absorbing electromagnetic radiation comprising:

a plate-like structure having a face portion forming a plurality of ridges upstanding from the plane of the structure, said face portion being formed of a suspension of particles of electromagnetic wave-absorbing material in a dielectric suspending material, each ridge forming steep surfaces oriented at an angle of less than 45° to an imaginary line that is normal to the plane of the plate-like structure;





said structure including a backing plate of highly heat conductive material with a plurality of protrusions extending into said ridges, each protrusion forming a reflecting surface lying behind a surface of a corresponding ridge, with the reflecting surface of the protrusion oriented at a smaller angle than the corresponding ridge surface, to said normal line.

4,164,719

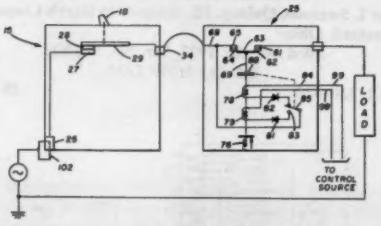
LOAD MANAGEMENT APPARATUS FOR RESIDENTIAL LOAD CENTERS

John Young, Lawrenceville; Jack Clavell, Lilburn, both of Ga., and George Gaskill, Hatboro, Pa., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 3, 1978, Ser. No. 893,208

Int. Cl.[2] H01H *75/00, 77/00*

U.S. Cl. 335—14 **10 Claims**



1. Load management apparatus including a manually operable switching section and a remotely operable management section; said switching section including interrupter contact means, a manually operable spring powered first mechanism connected to said interrupter contact means for opening and closing thereof, fault responsive trip means operatively connected to said first mechanism to operate the latter for opening of said interrupter contact means upon the occurence of predetermined fault currents at said switching section; said management section including mechanical main contact means con-

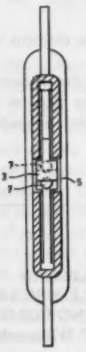
nected in series circuit with said interrupter contact means and an electrical load energized through said apparatus, biasing means normally maintaining said main contact means closed, remotely controlled electrically powered operator means operatively connected to said main contact means for selectively operating the latter to open said main contact means; said switching section and said management section constituting first and second modules respectively; said first and second modules including respective first and second housings of substantially equal widths stacked side-by-side.

4,164,720

MERCURY-WETTED REED CONTACT RELAY

Romain F. Bollen, Hasselt, Belgium, assignor to C. P. Clare International N.V., Tongeren, Belgium

Filed Apr. 28, 1978, Ser. No. 901,157
Claims priority, application Belgium, Apr. 29, 1977, 177141
Int. Cl.[2] H01H *29/00*
U.S. Cl. 335—47 **3 Claims**



1. A mercury-wetted reed contact relay comprising at least two reed means having coacting ends contained in a glass capsule; two tube means made of magnetic material, said tube means extending lengthwise within the capsule and around the reed means said tube means being aligned in spaced apart relation such that an axial gap is formed therebetween being situated at the lengthwise level of the coacting ends of said reed means, the inner wall of said tubes and the surface of the reed means being wetted with mercury, and the tips of said reed means being provided with spots made of a material which can not be wetted with mercury.

4,164,721

MAGNETIC ACTUATOR FOR A SHUTTER MECHANISM

Tokuji Ishida, Daito, and Tetsuhiko Inagaki, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1976, Ser. No. 748,966
Claims priority, application Japan, Dec. 11, 1975, 50/148047; Feb. 2, 1976, 51/10750
Int. Cl.[2] H01F *7/08, 7/04*
U.S. Cl. 335—234 **21 Claims**

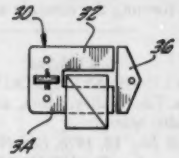
1. A magnetic actuator device for providing a controlled movement for use in cameras and the like comprising;

a flat platelike magnetically conductive yoke member having an integral first magnetic pole portion terminating in a first contact face and an integral second magnetic pole portion terminating in a second contact face, said first and second magnetic pole portions being formed in one body;

a relatively movable armature member having abutting surfaces capable of operatively contacting the first and second contact faces of the yoke, the armature member when contacting the yoke member forming a magnetic circuit path for magnetic flux;

a permanent magnet connected to one of the yoke and armature members and of such strength to generate sufficient magnetic flux to attract the yoke and armature members together;

a permanent magnet housing portion for retaining the permanent magnet in the magnetic circuit, the permanent magnet housing portion consisting of a retaining portion for retaining said permanent magnet in such a manner as not to protrude beyond the contacting surfaces of either one of armature member and the yoke member, when the



armature member and yoke member abut each other and a member portion having a high magnetic resistance and positioned adjacent the retaining portion, the member portion having a relatively small cross sectional area to suppress the amount of a magnetic flux running there through whereby a majority of the magnetic flux created by the permanent magnet will run through the magnetic circuit path; and

an electrically conductive coil for generating in the yoke member a magnetic flux of a polarity opposite that of the permanent magnet to thereby release the armature from the attracting force of the permanent magnet.

4,164,722

ELECTROMAGNETIC ACTUATOR WITH TORQUE-COMPENSATING POLES

Daniel C. Garvey, Fort Collins, Colo., assignor to Woodward Governor Company, Rockford, Ill.

Filed Jan. 9, 1978, Ser. No. 867,760
Int. Cl.[2] H01F *7/08*
U.S. Cl. 335—272 **13 Claims**

1. An electromagnetic actuator comprising

a stator and a rotor both made of magnetically permeable material and each having a plurality of projecting poles spaced apart from each other, the rotor poles and stator poles cooperating with each other so that each pair of opposed pole faces of a rotor pole and a stator pole form a narrow working air gap for passing magnetic flux between the opposed pole faces,

an electrically energizable coil for producing magnetic flux that passes through the poles of said rotor and stator and across the working air gaps between the opposed pole faces,

at least one pair of the opposed rotor and stator poles forming an air gap that remains substantially constant to

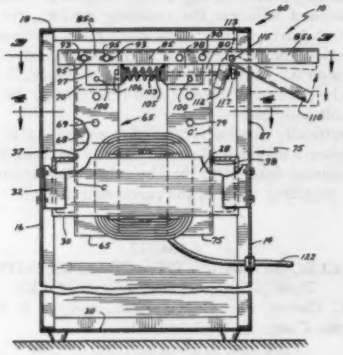
produce an increasing magnetic torque on said armature as said pole faces move out of register with each other and a decreasing magnetic torque as said pole faces move toward register with each other, and at least one pair of the opposed rotor and stator poles forming an air gap that varies to produce a decreasing magnetic torque on said rotor as the poles forming the constant air gap move out of register with each other and increasing magnetic torque as the poles forming the constant air gap move toward register with each other, whereby the change in the magnetic torque produced by said poles forming the variable air gap at least partially compensates for the change in the magnetic torque produced by the poles forming the constant air gap.

4,164,723

SHUNT RELEASE AND LOCKING STRUCTURE

Leonard S. Smith, Eden Valley, Minn., assignor to Century Mfg. Co., Minneapolis, Minn.

Filed Jun. 14, 1978, Ser. No. 915,174
Int. Cl.[2] H01F *21/06*
U.S. Cl. 336—133 **8 Claims**



1. A shunt release and locking structure for a moveable shunt welding machine, having in combination

a core,

a frame member supporting said core,

a pair of shunt holding members containing shunts disposed between opposed sides of said core and the adjacent portions of said frame member,

a handle member holding said shunt holding members in spaced relation,

means normally causing said shunt holding members to bear against said adjacent portions of said frame member in locking engagement,

a lever pivotally carried by said handle having said means connected thereto,

whereby a hand closing action about said handle and said lever causes said means to release said shunt holding members from said locking engagement.

4,164,724

BIMETALLIC THERMO-RELEASE, ESPECIALLY FOR PROTECTIVE MOTOR SWITCH

Franz Bogdanski, Springe, Fed. Rep. of Germany, assignor to Sprecher & Schuh AG, Switzerland

Filed May 2, 1978, Ser. No. 902,543
Int. Cl.[2] H01H *61/00*
U.S. Cl. 337—86 **4 Claims**

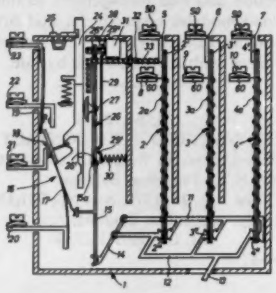
1. A bimetallic thermo-release, especially for a protective motor switch, comprising:

at least one bimetallic release element;

connection means for the connection of electrical lines connected with said bimetallic release element;

a bimetallic compensation element for temperature compensation;

release means which can be actuated as a function of bending



of the bimetallic release element and the bimetallic compensation element;

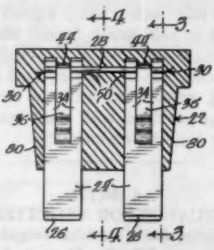
a heat-conducting connection means provided between said bimetallic compensation element and at least one of said connection means for the connection of at least one of the electrical lines.

4,164,725

THREE-PIECE SOLDERLESS PLUG-IN ELECTRICALLY CONDUCTING COMPONENT

Gerald L. Wiebe, 18 W. 077 Williamsburg La., Villa Park, Ill. 60181

Filed Aug. 1, 1977, Ser. No. 820,555
Int. Cl.[2] H01H *85/02*
U.S. Cl. 337—198 **33 Claims**



1. An encapsulated, three-piece solderless plug-in fuse comprising:

a pair of spaced-apart, generally parallel blades, each blade having at one end a terminal portion for being connected in an electrical circuit and at the other end a fusible link support spring clip;

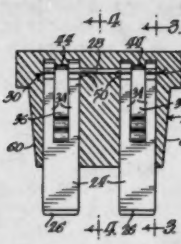
a fusible link disposed substantially perpendicular to each blade and clamped at one end by the spring clip of one of said pair of blades and at the other end by the spring clip of the other of said pair of blades; and

a solid unitary body of electrically insulating material encapsulating said fusible link and the fusible link support spring clip of each of said blades, the external surfaces of said link and said blade spring clip portions being in intimate contact with said material.

4,164,726
ENCAPSULATED PLUG-IN ELECTRICALLY CONDUCTING COMPONENT

Gerald L. Weibe, 18 W. 077 Williamsburg Lane, Villa Park, Ill. 60181

Continuation-in-part of Ser. No. 820,627, Aug. 1, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,151
Int. Cl.[2] H01H *85/60*
U.S. Cl. 337—215 25 Claims

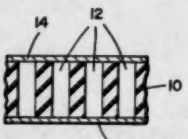


1. An encapsulated plug-in fuse comprising:
a pair of spaced-apart, generally parallel blades, each blade having at one of its ends a terminal portion for being connected into an electrical circuit;
an elongate fusible link having two ends and comprising a material having a melting point temperature substantially lower than said blades, said fusible link disposed substantially perpendicular to said blades and connected at each of its ends to one of said blades; and
a solid unitary body of electrically insulating material encapsulating said fusible link and the end of each said blade connected to said fusible link, the external surfaces of said link and portions of said blades being in intimate contact with said material and said terminal portions of said blades projecting from said material.

4,164,727
UNDERWATER ACOUSTIC ABSORBER

Ross E. Morris, Vallejo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1977, Ser. No. 788,730
Int. Cl.[2] G10K *11/00*
U.S. Cl. 340—5 D 1 Claim

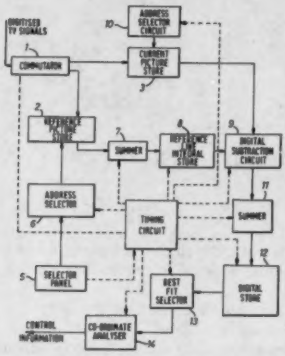


1. An underwater acoustic absorber and reflector comprising:
(a) a body having a single unlayered piece of resilient material with opposing faces, said body having a plurality of holes therethrough between said faces;
(b) an overlayer of thin corrosion resistant steel bonded to one face of said body; and
(c) a substrate of thin corrosion resistant steel bonded to the opposite face of said body whereby said holes are enclosed to form cavities.

4,164,728
CORRELATION TECHNIQUES

Robin G. Marsh, Reading, England, assignor to EMI Limited, Hayes, England

Filed Dec. 9, 1977, Ser. No. 859,238
Claims priority, application United Kingdom, Dec. 11, 1976, 51809/76
Int. Cl.[2] G06K *9/00*
U.S. Cl. 340—146.3 Q 8 Claims



1. A correlation arrangement comprising storage means containing storage locations for storing data relating to first and second two-dimensional representations of substantially the same scene, selector means for selecting data from groups of said storage locations, each group containing data relating to a respective substantially linear region of one or other of said representations, means for individually combining the data selected from each group to produce respective combination signals, means for comparing pairs of combination signals relating to corresponding regions of the first and second representations to form respective comparison signals indicative of the degree of similarity between each compared pair of combination signals, means for operating on the comparison signals to produce a correlation signal indicative of the extent to which said first and second representations resemble each other, means for effectively shifting the position of one of the representations relative to the other and for producing a respective correlation signal for each relative position adopted by said one representation in relation to the other, and means for selecting the correlation signal which indicates the closest resemblance of said first and second representations to one another.

4,164,729
SYNCHRO TO DIGITAL TRACKING CONVERTER

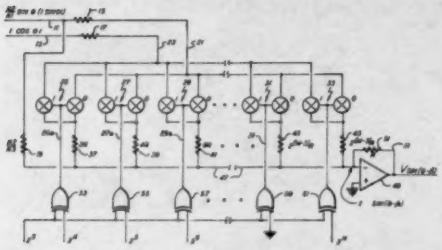
David J. Simon, Saddle Brook, N.J., and Edward C. Costello, Scarsdale, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 21, 1977, Ser. No. 853,342
Int. Cl.[2] G05B *1/00*; H03K *13/02*
U.S. Cl. 340—347 SY 13 Claims

1. In a synchro to digital tracking converter which includes means to generate a steering voltage; said means to generate including a sine-cosine generation circuit and a selection circuit providing inputs to said sine-cosine circuit, a demodulator having the output of said generator as an input, an integrator and voltage control oscillator driven by the demodulator; and an up/down counter generating a digital angle which is fed back to said sine-cosine circuit for comparison purposes, said steering voltage being required to have a magnitude and phase which will properly cause the feedback loop through said demodulator, integrator and voltage controlled oscillator and counter, to result in causing the error between the angle within

said counter and the actual angle to approach zero an improved sine-cosine circuit comprising:

(a) a plurality of double pole single throw switches, each having two inputs and an output, the respective two inputs of each of said switches, being coupled to the sine and cosine outputs of the selection circuit and the outputs of said switches being coupled to a binarily weighted resistor



ladder network, the sine input also being coupled through an additional resistor in common with said ladder network;

(b) a summing amplifier having the output of said ladder network as an input; and

(c) means for controlling said switches in dependence on the output of said counter.

4,164,730

EXTERNALLY CONTROLLABLE BINARY INTERROGATION AND DECODING CIRCUIT, PARTICULARLY FOR A REMOTE CONTROL LOAD SELECTION SYSTEM

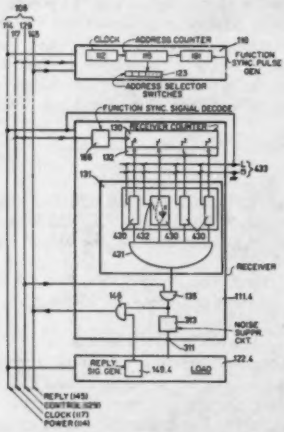
Albert Weckenmann, Ahrensburg, and Georg Haubner, Berg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,440

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658753

Int. Cl.² H04Q *11/04*

U.S. Cl. 340—168 R **23 Claims**



1. Remote control system for selection of at least one switchable load (122) from a central station (110) connected together by a ring bus system (106),

wherein the bus system (106) includes a power bus, (114), a clock bus (117) and a control bus (129);

wherein the central station includes a clock source (112), load address means (123) to select connection of a selected load (122) to the power bus (114) and counter means (115) providing control signals corresponding to selected count states of the counter, in accordance with the addressing provided by the load addressing means, and synchronized with clock pulses from the clock source; and

wherein at least one of the loads includes

a load control receiver (111) and a decoding stage (130, 131, 135, 431') forming part of the load control receiver (111) and being connected to both said clock bus (117) and said control bus (129) of the ring bus system (106) to decode address command signals appearing on the control bus (129) in synchronism with clock pulses appearing on the clock bus (117),

and wherein, in accordance with the invention

the decoding stage includes

a binary counter (130),

polarized power supply means (433) having two polarity terminals (433.I,L; 433.II,O),

a plurality of control gates (430) having transfer switch characteristics, each having one input connected to a selected binary output of the binary counter (130) and another input connected to a selected polarity terminal (L,O) of said polarized power supply means (433), said control gates providing an output (I, II) depending on the selected polarity of the power source connected to the other input thereof, as a function of the output from the counter,

and an AND-function gate (431, 431') having its input connected to and controlled by the output of the control gates (131; 430) and receiving signals from said control gates characteristic of the output from the counter in either direct, or inverted form as determined by the selected connection of the control gates to said source of polarized power supply (433).

4,164,731

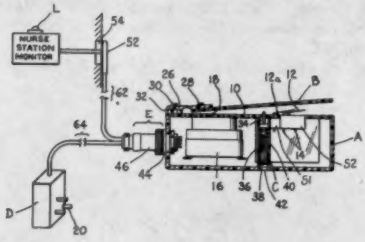
ELECTRICAL COMMUNICATION SIGNALLING DEVICE

Harold R. King, Rt. 7, Box 223, Easley, S.C. 29640

Filed Sep. 15, 1977, Ser. No. 833,431

Int. Cl.² G08B *25/00*

U.S. Cl. 340—286 R **10 Claims**



1. An electrical signalling device for use in an electrical communication system of the type wherein an attendant at a nurse station is called from a remote bed location by manual closure of a switch by a bed patient at the bed location which activates a call signal at said nurse station, wherein the improvement comprises:

a switch box having a face plate;

switch means carried by said switch box adjacent said face plate for activating said call signal;

a manually operable actuator plate member carried by said switch box in a generally superposed position relative to said face plate for activating said switch means;

adjustable biasing means carried adjacent said actuator plate for adjusting the amount of force necessary for applying said actuator member to actuate said switch means; and

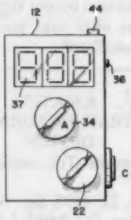
said actuator plate being carried on said switch box by means of a resilient hinge about which plate pivots, said resilient hinge biasing said actuator plate slightly out of contact with said switch means, said resiliently hinged plate and adjustable biasing means cooperating to provide highly sensitive switching actuatable by the most severely handicapped bed patient.

4,164,732

PACING DEVICE FOR RUNNERS AND THE LIKE

Enrico E. Pischiera, 20 Bond La., Hicksville, N.Y. 11801

Filed Jan. 31, 1978, Ser. No. 873,878
Int. Cl.[2] G08B *3/10*
U.S. Cl. 340—323 R **5 Claims**



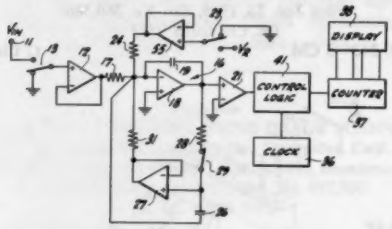
1. A pacing device comprising an Audio Frequency generator; a circuit for varying the pitch of the Audio Frequency signal produced, a gate connected to said generator; a variable pulse generator also connected to said gate for determining the periodicity of the tone bursts emitted thereby; a frequency counter display device connected to said pulse generator; an audio amplifier for amplifying said tone bursts from said gate; volume control means operatively associated with said amplifier and means for converting the audio signal to sound waves.

4,164,733

QUANTIZED FEEDBACK ANALOG TO DIGITAL CONVERTER WITH OFFSET VOLTAGE COMPENSATION

George F. Landsburg, and Lorimer K. Hill, both of Cupertino, Calif., assignors to Siliconix Inc., Santa Clara, Calif.

Filed Apr. 29, 1977, Ser. No. 792,351
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 NT **4 Claims**



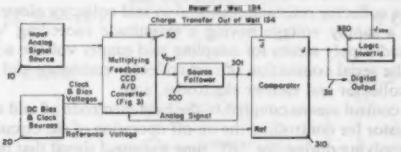
1. An analog-to-digital converter comprising: an integrator, a storage capacitor, a voltage source, means active during a first initializing period for connecting the capacitor to the output of the integrator and applying a current to the integrator from the source at a predetermined duty cycle to cause the integrator to operate about a predetermined level and establish a voltage corresponding to the predetermined level on the storage capacitor, a comparator having one input connected to the output of the integrator and a second input connected to a reference level intermediate the source voltage and the voltage established on the capacitor, means for applying current from the voltage source and the storage capacitor to the integrator in phase with the comparator output to cause the integrator to operate about the reference level during a second initializing period, means for applying an analog input signal to the integrator during a measurement period, means responsive to the comparator for applying a balancing current to the integrator from the voltage source and the storage capacitor at either a first duty cycle greater than the predetermined duty cycle or a second duty cycle less than the predetermined duty cycle during successive intervals of the measurement period, means active during a period following the measurement period for supplying current to the integrator from the source and capacitor to return the integrator output to the reference level of the comparator, means for providing clock pulses, and means responsive to the comparator for counting the clock pulses during the measurement period and the period following the measurement period to provide a digital output signal.

4,164,734

CHARGE TRANSFER MULTIPLYING FEEDBACK A/D CONVERTER

William E. Jensen, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 26, 1978, Ser. No. 918,993
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 AD **11 Claims**



1. An analog to digital converter comprising, in combination:

primary charge storage means having a charge storage capacity substantially corresponding to one-half of the full scale value of said converter;

means for periodically creating a charge indicative of the instantaneous value of an analog input signal in an initial charge storage area and including additional means for applying said charge to said primary charge storage means;

secondary charge storage means coupled to said primary charge storage means for temporarily storing excess charges which overflow said primary charge storage means and storing charges which are transferred from said primary charge storage means;

sensing means for sensing the amount of charge stored in said secondary charge storage means, and including further means for periodically creating an amount of charge which is proportional to twice said sensed charge, said further means including said additional means for applying the charge which is proportional to twice the sensed charge to said primary charge storage means;

barrier level changing means for draining the charge stored in said secondary charge storage means;

comparator means coupled to said sensing means for periodically determining whether or not the charge applied to said primary charge storage means exceeds its charge storage capacity and for providing a binary output signal indicative thereof; and

means responsive to said binary output signal for draining the charge in said primary charge storage means when overflow charges are sensed and for transferring the charge stored in said primary charge storage means to said secondary charge storage means when a overflow charge is not sensed;

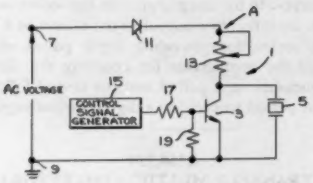
whereby said binary output signals are indicative of the value of the applied analog input signal.

4,164,735

PIEZOELECTRIC AUDIBLE INDICATOR CIRCUIT

Robert J. Salem, Danbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 17, 1977, Ser. No. 843,137
Int. Cl.[2] G08B 3/00
U.S. Cl. 340—384 E **5 Claims**



1. A piezoelectric audible indicator circuit, comprising:
(a) a transistor device exhibiting a given collector to emitter breakdown voltage, Vceo, and a given collector to emitter sustaining voltage, Vsus,
(b) a two electrode piezoelectric crystal exhibiting a given internal capacitance coupled between the collector and emitter electrodes of said transistor,
(c) a collector resistance coupled to said collector electrode,
(d) a supply voltage having a magnitude exceeding Vceo and supply means for coupling said supply voltage across the serial connection of said collector resistance and said collector and emitter electrodes, and
(e) control means coupled to the base electrode of said transistor for controlling the on-off operation of the circuit by applying during the "off" time a control signal that biases the transistor into its normal conductive state and prevents the circuit from oscillating, and by applying during the "on" time a control signal that biases the transistor so as to oppose normal conduction whereby circuit oscillations result from the internal capacitance of said piezoelectric crystal being sequentially charged through said collector resistance to Vceo and discharged through the transistor conducting in its breakdown mode to Vsus, at which point the transistor once again ceases conduction, the process being cyclically repeated so as to cause said piezoelectric crystal to emit an audible signal.

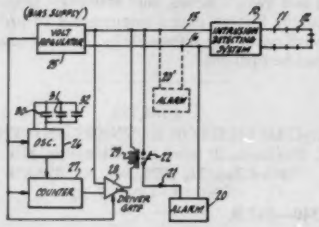
4,164,736

APPARATUS FOR DISABLING AN ALARM AFTER A PREDETERMINED OPERATING PERIOD

Roy Stockdale, Huntington, N.Y., assignor to NAPCO Security Systems, Inc., Copiague, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,254
Int. Cl.[2] G08B 19/00
U.S. Cl. 340—530 **10 Claims**

1. Apparatus for disabling an alarm after a predetermined operating period, comprising:
(a) an intrusion detection system operative to provide an output potential at a terminal upon detection of an intrusion,
(b) an oscillator responsive to said output potential for providing at an output, a series of pulses at a selectable frequency rate,
(c) a counter reponsive to said output potential and operative to receive said pulses to provide an output signal for a predetermined number of pulses from said oscillator, said output signal manifesting said predetermined operating period,
(d) alarm indicating means having at least one input terminal for receiving a potential to cause said alarm to operate,
(e) switching means coupled to said alarm means and having a first mode responsive to the presence of said output potential for operating said alarm and having a second



mode responsive to said output signal from said counter to disable said alarm after said predetermined number of pulses from said oscillator.

4,164,737

DIRECTIONAL TRAILER TURNING SIGNALING DEVICE

Robert H. Hunter, Mesquite, Tex., assignor to Trailer Eye, Inc., Dallas, Tex.

Filed Sep. 22, 1977, Ser. No. 835,658
int. Cl.[2] B60Q 1/00
U.S. Cl. 340—686 **4 Claims**

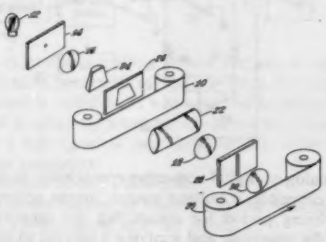
1. A directional turning signaling device mountable on a vehicle trailer hitch to determine a trailer's position behind the vehicle, said trailer being attached by a tongue to a ball of the trailer hitch which comprises:
(a) a frame assembly mounted on the hitch, said frame assembly comprising an L-shaped bar attached to the hitch and a top box hingedly attached to the bar to enable the box to tilt upward and away from the ball;
(b) a contact arm in contact with the tongue to pivot with the tongue about the ball and connected to a sensing means for determining the amount of pivoting by the contact arm, the sensing means being attached to the frame assembly; and
(c) an indicator gauge mounted in the vehicle and connected to the sensing means for providing visual indication of the trailer position behind the vehicle.

4,164,738

FOCUSED SYNTHETIC ARRAY

Peter Swerling, Pacific Palisades, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 23, 1966, Ser. No. 560,386
Int. Cl.[2] G01S 9/42
U.S. Cl. 343—5 CM **12 Claims**



11. A method of providing a moving target indication in a synthetic array radar system including the steps of
forming a gain pattern from an antenna having two separate crossed beams,
receiving information from each of the two crossed beams,

subtracting the information from one of the crossed beams from the information of the other of the crossed beams to produce a difference signal,

converting the difference signal to a bipolar video signal, and

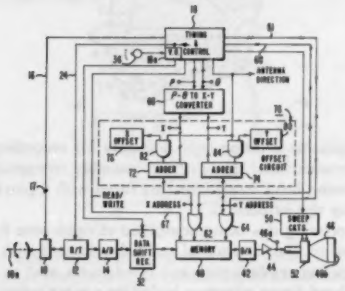
processing the bipolar video signal to form a synthetic array.

4,164,739

REDUCTION OF TARGET SHIFT IN COORDINATE CONVERTER

Kazuo Katagi, Woodland Hills, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,833
Int. Cl.[2] G01S 7/44, 9/60
U.S. Cl. 343—5 SC **5 Claims**



1. In a system for producing from signals representing first addresses in a first coordinate system corresponding signals representing second addresses in a second coordinate system which has fewer addresses than has said first coordinate system comprising in combination:

means receptive of said signals representing successive ones of said first addresses in either a first sequence or a second different sequence for producing corresponding signals representing said second addresses in accordance with the relationship between said first coordinate system and said second coordinate system and for producing a signal representing a given second address for more than one first address;

means responsive to said signals representing said first addresses being received in said first sequence for producing a signal indicative thereof; and

means responsive to said sequence indicative signal for changing said corresponding signals representing said second addresses by a predetermined amount.

4,164,740

SYNTHETIC APERTURE USING IMAGE SCANNER

James N. Constant, 1603 Danbury Dr., Claremont, Calif. 91711

Continuation of Ser. No. 663,847, Mar. 4, 1976, abandoned. This application Apr. 19, 1978, Ser. No. 897,907
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—5 CM **52 Claims**

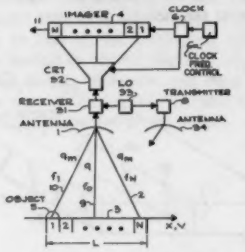
9. A method of generating a synthetic aperture comprising the steps of:

focusing an object scene through a focusing unit onto an image sensor having a plurality of photoelements each providing an electric charge signal in response to an input signal;

detecting in the image sensor, signals from objects in relative motion in the object scene of said focusing unit,

said signals representing one of illuminations or radiations of said objects; and

shifting the image sensor at the rate of motion of objects in said object scene,



said shifting providing an output pulse for each object crossing the field of view of said focusing unit,

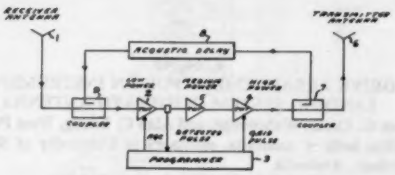
said pulse representing the image of said object.

4,164,741

DECEPTION CIRCUITRY FOR AUTOMATIC RANGE GATE TRACKING IN FIRE CONTROL RADAR

Jerry D. Schmidt, Enon, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 13, 1968, Ser. No. 761,891
Int. Cl.[2] G01S 7/38
U.S. Cl. 343—18 E **4 Claims**



1. The improvement in a traveling wave tube repeater chain of an ECM system for receiving a radar pulse of essentially predetermined time width from an opposing range gate tracking radar and providing a deceptive transmitted signal, the traveling wave tube repeater chain having a low power level traveling wave tube amplifier and a higher power level traveling wave tube amplifier, the said improvement comprising:

(a) feedback means cooperating with the higher power traveling wave tube amplifier and the low power traveling wave tube amplifier for feeding back a portion of the output signal of the higher power traveling wave tube amplifier to the low power traveling wave tube amplifier; and

(b) acoustic delay means cooperating with the said feed-back means for delaying the feed-back signal.

4,164,742

MULTIBEAM SLOT ARRAY

Jeffrey T. Nemit, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,614
Int. Cl.[2] H01Q 13/10
U.S. Cl. 343—768 **9 Claims**

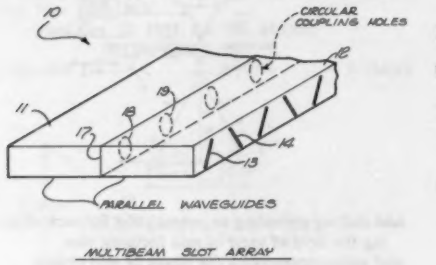
1. A directive antenna arrangement comprising:

a slotted first rectangular waveguide forming a linear array to produce a first beam at a first angle in a first plane;

a second waveguide parallel to said first waveguide and having one common narrow wall with said first waveguide;

feed means for separately coupling between said first and

second waveguides and first and second external ports, respectively, said feed including means for simultaneously providing at least one choice of relative feed phases pairs consisting of a first phase at said first port and substantially 180° phase at said second port;



MULTIBEAM SLOT ARRAY

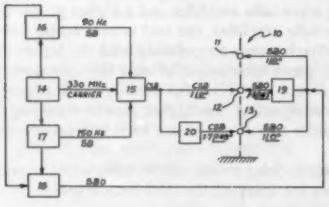
and energy coupling means through said common wall for coupling energy between said first and second waveguides at a plurality of predetermined points substantially over the lengths of said waveguides, said antenna arrangement thereby being capable of generating said first and second beams simultaneously at angularly separated positions.

4,164,743

DRIVE ARRANGEMENT FOR AN INSTRUMENT LANDING SYSTEM GLIDEPATH ANTENNA

James G. Lucas, Wahroonga, and Alan C. Young, West Pennant Hills, both of Australia, assignors to University of Sydney, Sydney, Australia

Filed Nov. 4, 1977, Ser. No. 848,693
Claims priority, application Australia, Nov. 12, 1976, PC8121
Int. Cl.[2] H01Q *3/26*; G01S *1/08*
U.S. Cl. 343—854 **2 Claims**



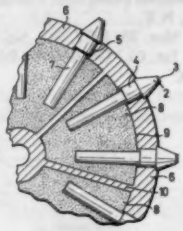
1. A drive arrangement for an instrument landing system antenna array having three substantially equi-spaced elements arrayed vertically above a ground plane, all three elements being arranged to be driven to radiate SBO energy and the lowermost and central element being arranged to be driven to radiate also CSB energy; the relative amplitudes and phases of the drive signals being
to the centre element, CSB 1∠0°,
to the lowermost element, CSB 1.7∠143°,
to the uppermost and lowermost elements, SBO 1∠0°, and
to the centre element, SBO 1.7∠143°,
the drive magnitudes being variable by ±15% and the phase angles being variable by ±10°.

4,164,744

DISPOSABLE PRINTING HEAD FOR RECORDING MEASURING INSTRUMENTS, AND THE LIKE

Paul Freude, Düren-Birgel, Fed. Rep. of Germany, assignor to Dia-Nielsen GmbH Zubehör für die Messtechnik, Duren, Fed. Rep. of Germany

Filed Nov. 15, 1977, Ser. No. 851,776
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1976, 7636092[U]
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 A **12 Claims**



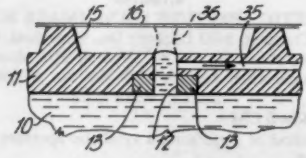
1. A disposable printing head assembly for recording measuring instruments and the like, said assembly comprising:
(a) a printing head frame structure fitted with a plurality of printing tips or pens,
(b) said printing tips being composed of open-pore foamed, sintered or fibrous material and being formed with different printing symbols such as a point, cross, star, or circle,
(c) said head frame structure including a store material and a plurality of bores for receiving said printing tips,
(d) said printing tips having a frusto-conical head portion, an adaptor portion and a shaft portion,
(e) each said head portion having a base diameter that is greater than the diameter of each said adaptor portion which is engaged in a bore of the printing head,
(f) the head portion being disposed at one end of the printing tip and projecting outside of the head frame structure,
(g) the shaft portion forming the other end of the printing tip and being inserted into direct contact with said store material,
(h) said adaptor portion being disposed between the head portion and the shaft portion.

4,164,745

PRINTING BY MODULATION OF INK VISCOSITY

Paolo Cielo, and William D. Westwood, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 8, 1978, Ser. No. 903,503
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 R **8 Claims**



1. Apparatus for printing by modulation of the viscosity of liquid ink, comprising:
a reservoir for holding a supply of liquid ink of a predetermined viscosity, said reservoir including a wall and at least one orifice of a predetermined size in said wall;
means for supplying ink to said reservoir at a predetermined pressure;

electrical heating means associated with said orifice, said electrical heating means being controllably variable; and

a bye-pass passage intercepting said orifice and connected to said reservoir;

whereby when no heating is applied said ink flows through said bye-pass, application of heat reducing the viscosity of the ink and increasing the ink flow above the capacity of said bye-pass and ink issuing from said orifice.

4,164,746

APPARATUS FOR PRINTING MATERIALS

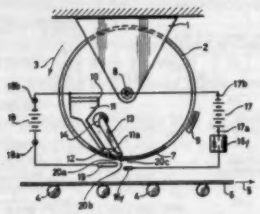
Lodewijk Anselrode, St. Anthonis, Netherlands, assignor to Stork Brabant B.V., Boxmeer, Netherlands

Filed Nov. 25, 1977, Ser. No. 854,618

Claims priority, application Netherlands, Dec. 1, 1976, 7613401

Int. Cl.² G01D *15/16*

U.S. Cl. 346—140 R 8 Claims



1. An apparatus for printing on a web of material comprising a rotatable cylindrical body containing an electrically conductive printing fluid and having a wall with capillar drop-dispensing apertures therein, said cylindrical body being positioned above a moving web of material to be printed and rotatable in such a direction that the circumferential velocity of the body adjacent the web has a component in the same direction as the direction of movement of the web, a plurality of control electrodes positioned between the web of material to be printed and the rotatable body in the vicinity of said apertures, means connected to said control electrodes for selectively generating a voltage difference between said printing fluid and the control electrodes, at least one auxiliary electrode positioned between said control electrodes and said rotatable body, and second means connected to said auxiliary electrode for generating a voltage difference between said auxiliary electrode and the printing fluid such that a convex fluid-meniscus is formed on the dispensing apertures as said apertures move above said auxiliary electrode.

4,164,747

SEMICONDUCTOR ARRANGEMENT

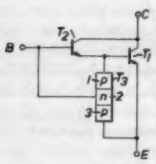
Dieter Gerstner, Heilbronn, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Mar. 9, 1977, Ser. No. 775,782

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610122

Int. Cl.² H01L *27/04*

U.S. Cl. 357—46 9 Claims



1. A three-pole semiconductor arrangement for switching large currents having two transistors of the same region sequence connected together in a Darlington circuit, one of which acts as a driving transistor for the output transistor switching the current, characterized in that a further three-layer semiconductor transistor is provided with a region sequence opposite to that of the Darlington transistors, said further transistor having its central region directly connected to the base of said driving transistor, one outer region being connected to the base of the output transistor and its second outer region directly connected to the emitter of said output transistor.

4,164,748

STEREOSCOPIC COLOR TELEVISION SYSTEM WITH LENTICULAR SCREEN

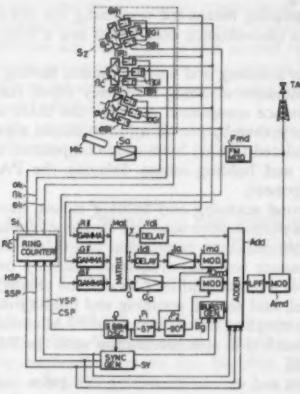
Kiyoshi Nagata, 2-209 Kosugi-cho, Nakahara-ku, Kawasaki-shi, Japan

Filed Apr. 1, 1977, Ser. No. 783,628

Claims priority, application Japan, Apr. 1, 1976, 51-35114

Int. Cl.² H04N *9/60*

U.S. Cl. 358—3 9 Claims



1. A stereoscopic color television transmission method comprising the steps of:

photographing an object by M color television cameras, where M is an integer greater than two, provided with color signal outputs each divided into fields of horizontal line scans said cameras being horizontally arranged at equal intervals;

generating a horizontal synchronization signal at the end of each horizontal scan, a vertical synchronization signal for each field, a stereoscopic synchronization signal for every Mx2 fields or M frames and a color subcarrier signal;

switching the operatin of said M color television cameras successively in response to the horizontal synchronization signal, vertical synchronization signal, stereoscopic synchronization signal and color subcarrier signal per period of said color subcarrier signal, while changing for each field the order in which the operation of said M color television cameras is switched over during every M periods of the color subcarrier signal; and

sending forth output signals from said M color television cameras together with the horizontal synchronization signal, vertical synchronization signal, stereoscopic synchronization signal and color subcarrier signal.

4,164,749
METHOD AND APPARATUS FOR DIGITALLY ENCODING COLOR VIDEO SIGNALS HAVING GUADRATURE MODULATED SUBCARRIERS

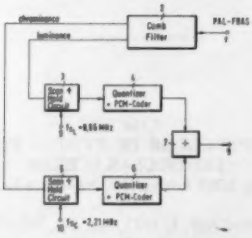
Jürgen Heitmann, Seeheim, and Hans-Peter Maly, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 21, 1977, Ser. No. 808,700

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1976, 2628816

Int. Cl.² H04N 9/32, 9/39

U.S. Cl. 358—13 4 Claims



1. An apparatus for digitally encoding sequential frames of a color video signal having a quadrature modulated subcarrier comprising:

(a) Separating means for separating the color video signal into a chrominance component and a luminance component;

(b) First scanning and holding means, having an output and a luminance scanning frequency input, for scanning the luminance component at twice the color subcarrier frequency, thereby providing at its output a pulse amplitude modulated (PAM) luminance component, said first scanning and holding means delaying the PAM luminance component;

(c) Second scanning and holding means, having an output and a chrominance scanning frequency input, for scanning the chrominance component at exactly one quarter the luminance scanning frequency, thereby providing at its output a pulse amplitude modulated (PAM) chrominance signal, said second scanning and holding means harmonically coupling and delaying the PAM chrominance signal so that it is in synchronization with the PAM luminance signal;

(d) First and second quantizing and pulse code modulating encoder means connected respectively to the outputs of the first and second scanning and holding means for quantizing and encoding the PAM signals into digitalized components; and

(e) Digital combining means for combining the digitalized component to provide a digital color video signal.

4,164,750
VIR KILLER SIGNAL GENERATOR FOR COLOR TELEVISION RECEIVER

Nobukazu Hosoya, Ikoma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 9, 1978, Ser. No. 904,449

Claims priority, application Japan, May 9, 1977, 52/54520; May 9, 1977, 52/54521; May 9, 1977, 52/54522; Nov. 18, 1977, 52/139594

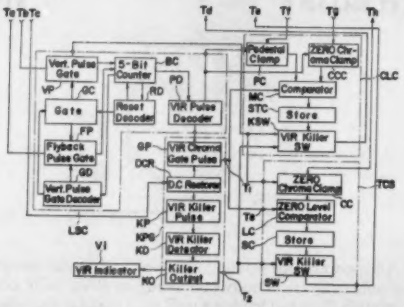
Int. Cl.³ H04N 9/49, 9/535

U.S. Cl. 358—26 6 Claims

1. A killer signal generator for use in a color television receiver having an information processing circuit for processing specific information contained in a line occurring after equalizing pulse interval and vertical sync pulse interval included in the vertical blanking interval, said killer signal generator comprising:

line pulse sampling means for generating pulses synchronized with the line in which said specific information is contained;

D.C. restoring means for restoring D.C. component of a series of video information, which includes a differential pair composed of first and second transistors, said first transistor having a first electrode receiving the video information including said specific information, said second transistor having a first electrode connected to a source of constant reference potential, a second electrode connected to the second electrode of the first transistor and a third electrode connected to one of the opposed ends of a capacitor, the other of the opposed ends of the capacitor being adapted to receive said video information, and a constant current transistor connected to the second electrodes of the first and second transistors, said D.C. restoring means generating D.C. restored output on the



first electrode of the first transistor corresponding to each information signal contained in the composite video signal and having a level higher than the pedestal level thereof;

means for composing said D.C. restored output pulse and a pulse indicative of the duration of the line in which the specific information is contained, and for generating a pulse indicative of the specific information;

a storing means for storing said pulse indicative of the specific information for at least one field period; and

a killer signal generating means for generating an operation signal for enabling said information processing circuit in response to the output of the storage means when the color television receiver receives video information with said specific information and also a killer signal for bringing said information processing circuit into an inoperative condition when the color television receiver receives an ordinary video information.

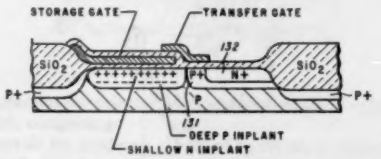
4,164,751
HIGH CAPACITY DYNAMIC RAM CELL

Aloysious F. Tasch, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 10, 1976, Ser. No. 740,528

Int. Cl.² H01L 27/04; G11C 11/24

U.S. Cl. 357—41 2 Claims



1. A memory system of the type having an array of memory cells selectively addressable by row and column lines, each of said memory cells of said array comprising:

a semiconductor substrate of one conductivity type material common to said cells, said substrate having a first surface;

a region of the other conductivity type in said substrate adjacent to said first surface for forming a bit line and a transistor source;

a storage region lying in said substrate adjacent to said first surface and spaced from said other conductivity type region, said storage region forming a transistor drain and including a shallow implant of the other conductivity type impurity lying in said substrate near said first surface, and a deep implant of said one conductivity type impurity having an impurity dopant concentration that is greater than the dopant concentration of said one conductivity type material of said substrate;

a transfer region in said substrate adjacent to said first surface and disposed between said other conductivity type region and said storage region, said transfer region being defined by a zone of said one conductivity type material having an impurity dopant concentration greater than the dopant concentration of said one conductivity type material of said substrate;

said other conductivity type region lying within said zone of said one conductivity type material;

a storage gate overlying said storage region in spaced alignment therewith;

a transfer gate partially overlying said storage gate and in spaced relation thereto, said transfer gate being separately operable from said storage gate and including a transfer gate portion overlying said transfer region in spaced alignment therewith; and

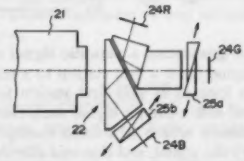
a body of insulating material disposed on said first surface of said substrate and interposed between said storage region and said storage gate, and said transfer region and said transfer gate, respectively, and said insulating body also being interposed between said storage gate and said transfer gate.

4,164,752

OPTICAL SYSTEM FOR COLOR TELEVISION CAMERAS

Yoshikazu Doi; Katsuo Katagiri, and Kazuo Yoshikawa, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Dec. 12, 1977, Ser. No. 859,747
Claims priority, application Japan, Dec. 15, 1976, 51-150552
Int. Cl.[2] H04N *9/04*
U.S. Cl. 358—55 **10 Claims**



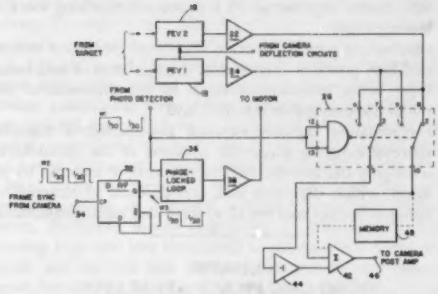
1. An optical system for a color television camera provided with an interchangeable taking lens including a taking lens having an optical axis, a color separating prism block located behind the taking lens, said color separating prism block having an entrance optical axis coinciding with the optical axis of the taking lens and three different color exit optical axes, and three image pick-up tubes located behind the color separating prism block on said three different color exit optical axes respectively, wherein the improvement comprises optical path length varying means selectively inserted in said three different color exit optical axes behind said color separating prism block, whereby color images formed in the three different color exit optical axes are all sharply focused on said three image pick-up tubes respectively.

4,164,753

DUAL PYROELECTRIC VIDICON INFRARED CAMERA

Travis W. Metcalf, Lemon Grove, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1978, Ser. No. 922,401
Int. Cl.[2] H04N *5/33*; H01J *31/49*
U.S. Cl. 358—113 **7 Claims**



1. In a dual pyroelectric vidicon infrared camera, the combination comprising:

(a) first and second pyroelectric vidicons,

(b) means for receiving and alternately transmitting, infrared energy radiated from an object of interest to the target of said first vidicon and the target of said second vidicon,

(c) circuit means connected to the output of said first and second vidicons for alternately inverting and summing the outputs of said vidicons,

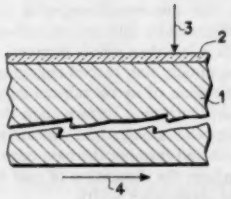
(d) whereby the sensitivity and the signal to noise ratio of said infrared camera is increased.

4,164,754

METHOD OF MANUFACTURING A DIE DESIGNED TO DUPLICATE A VIDEO FREQUENCY SIGNAL RECORDING

Jean-Claude Dubois, Paris, France, assignor to Thomson-Brandt, Paris, France

Continuation of Ser. No. 595,315, Jul. 11, 1975, abandoned. This application May 6, 1977, Ser. No. 794,641
Claims priority, application France, Jul. 16, 1974, 74 24668
Int. Cl.[2] H04N *5/86*
U.S. Cl. 358—128 **5 Claims**



1. In a method of fabricating a die for duplicating a video frequency signal recording:

(1) manufacturing a master impression consisting of a substrate covered with a layer of positive photosensitive material having a thickness on the order of 3000 to 4000 A; said layer presenting a multiplicity of cavities forming a spiral track in said photosensitive layer, by a process comprising the following steps:

(a) exposing said photosensitive layer using a fine laser beam focussed on the layer and modulated by the signal which is to be recorded, said laser beam and said photosensitive layer moving in relation to each other so as to produce a

signal latent impression forming a spiral track onto the substrate;

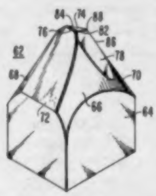
(b) developing said layer of photosensitive material, to lay bare small portions of said substrate along said spiral track; and

(2) manufacturing a die which is a counterpart of the recording and presents a multiplicity of metal projections adhering to said bare portions of the substrate, the heights of said projections being equal to the depths of the cavities of said master impression, by a process comprising the following steps:

(c) depositing a metal layer on said developed layer and on said bare portions of substrate, the thickness of said metal layer being substantially equal to the thickness of the initial photosensitive material; and

(d) eliminating the non-exposed photosensitive material thereby carrying away the portions of the metal layer overlying the non-exposed photosensitive material by an agent which dissovles said non-exposed photosensitive material but not said metal, to form said metal projections.

4,164,755
VIDEO DISC PICKUP APPARATUS
Yasushi Matsumoto, Narashino, Japan, assignor to RCA Corporation, New York, N.Y.
Filed Sep. 2, 1977, Ser. No. 830,029
Claims priority, application United Kingdom, Sep. 13, 1976, 37852/76
Int. Cl.² H04N *5/76*
U.S. Cl. 358—128 **12 Claims**



1. A pickup stylus for playing back prerecorded signals from a disc record track of a given width when stylus/record relative motion is established; said pickup stylus comprising:

a tapered stylus element having a plurality of conical portions in the region of its tip; said conical portions having a common axis;

wherein two of said conical portions are separated by a substantially flat, non-record-engaging surface; wherein the angle subtended by said non-record-engaging surface with said axis is less than ninety degrees;

wherein a substantially flat, record-engaging surface is disposed in the region of its tip substantially orthogonal to said non-record-engaging surface such that said surfaces intersect each other along a line substantially perpendicular to said axis and forming the base edge of said record-engaging surface; the dimension of said base edge being less than said given track width.

4,164,756
DISC RECORD GROOVE SKIPPER
Minoru Toda; Susumu Osaka, both of Machida, and Yasushi Matsumoto, Narashino, all of Japan, assignors to RCA Corporation, New York, N.Y.
Filed Apr. 13, 1978, Ser. No. 895,973
Claims priority, application United Kingdom, Apr. 19, 1977, 16280/77
Int. Cl.² H04N *5/76;* **G11B** *3/38, 17/00*
U.S. Cl. 358—128 **11 Claims**

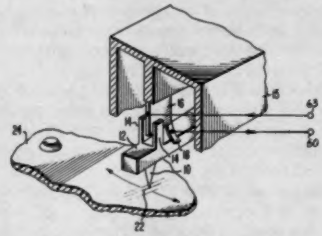
1. In a system for playing back prerecorded signals from a spiral track disposed on the surface of a disc record, apparatus comprising:

(A) a signal pickup stylus;

(B) a support arm;

(C) a mounting structure secured to said support arm for positioning said stylus for engagement with said record track;

(D) a driving element secured to said support arm;

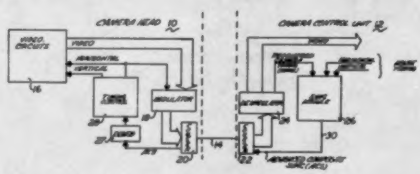


(E) means for sensing deviations of the relative positions of said mounting structure and said driving element from a predetermined relationship;

(F) means responsive to the output of said sensing means for altering the position of said driving element in order to oppose said deviations; and

(G) means for rendering said driving element additionally responsive to a command signal.

4,164,757
SYSTEM FOR COMMUNICATING A PERIODIC SIGNAL BY MEANS OF COHERENT MODULATION
Charles F. Smiley, Quincy, Ill., assignor to Harris Corporation, Cleveland, Ohio
Filed Nov. 14, 1977, Ser. No. 850,930
Int. Cl.² H04N *5/04, 5/26*
U.S. Cl. 358—149 **12 Claims**



1. Apparatus for generating a periodic signal and for communicating said signal from a first station to a second station, comprising means located at said first station for generating said periodic signal and a carrier signal such that said carrier signal has a frequency which is a fixed multiple of the frequency of said periodic signal, and that said carrier signal bears a substantially fixed phase relationship to said periodic signal, means for modulating said carrier signal in accordance with said periodic signal to provide a modulated carrier signal, means for communicating said modulated carrier signal from said first station to said second station, and means located at said second station for demodulating said modulated carrier signal so as to recover said periodic signal therefrom, whereby said recovered periodic signal has a reduced noise component due to the coherence of said carrier signal with said periodic signal.

8. In a television camera system wherein a camera head communicates video signals to a control station, apparatus for synchronizing the timing of said video signals with the timing of a video sync signal at said control station, comprising: phase detector means at said control station responsive to the timing of said video signals for comparing said timing of said video

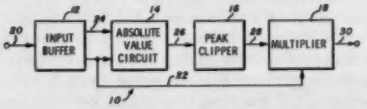
signals to the timing of said video sync signal and for providing an output signal indicating the phase difference therebetween; signal generating means for generating a return video sync signal and for adjusting the phase of said signal in accordance with said phase detector output signal; modulating means at said control station for modulating said return video sync signal onto a carrier signal also generated by said signal generating means, so as to produce a modulated signal; means for communicating said modulated signal to said camera head from said control station; means at said camera head for demodulating said modulated signal so as to recover said return video sync signal therefrom; and, means at said camera head for synchronizing said video signals with said return video sync signal thus recovered; wherein said signal generating means generates said return video sync signal and said carrier signal so that said signals are in phase synchronism with one another, whereby said return video sync signal recovered by said demodulating means has a reduced noise component because of the coherence of said signals.

4,164,758

NOISE SUPPRESSION APPARATUS

Leonard Kowal, 12647 Miller Ave., Saratoga, Calif. 95070

Filed Aug. 30, 1977, Ser. No. 829,186
Int. Cl.[2] H04N *5/21*; H04B *1/10, 15/00*
U.S. Cl. 358—167 **9 Claims**



1. A noise reducing apparatus for improving the signal-to noise ratio of a noisy signal, comprising:

first means for rectifying the noisy signal to develop a first signal having an instantaneous amplitude substantially equal to the absolute value of the instantaneous amplitude of said noisy signal;

clipping means for clipping said first signal to generate a second signal having an instantaneous amplitude substantially equal to that of said first signal when said first signal is less than a predetermined value and having an instantaneous amplitude substantially equal to that of said predetermined level when the amplitude of said first signal is greater than said predetermined level; and

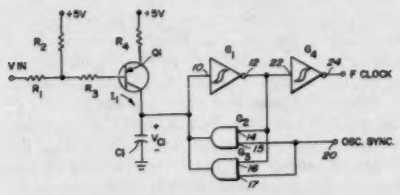
multiplying means responsive to second signal and said noisy signal and operative to generate a noise reduced signal having an instantaneous amplitude proportional to the product of the amplitudes of said second signal and said noisy signal.

4,164,759

VOLTAGE CONTROLLED OSCILLATOR

David R. Stubben, Santa Clara, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Dec. 16, 1977, Ser. No. 861,189
Int. Cl.[2] H04N *3/22*
U.S. Cl. 358—180 **9 Claims**



1. A voltage controlled oscillator for producing a periodic output signal having a frequency determined by an analog input voltage comprising: a variable current source controlled by said analog input voltage and producing a current that is proportional to said analog voltage, capacitor means coupled to said current source for receiving said current and for storing a charge resulting in a stored voltage across said capacitor means, threshold means responsive to said stored voltage crossing high and low thresholds to produce said periodic output signal, and gate means connected to said capacitor means for sinking charge, said gate means varying said stored voltage by periodically draining charge from said capacitor means in response to said periodic output signal.

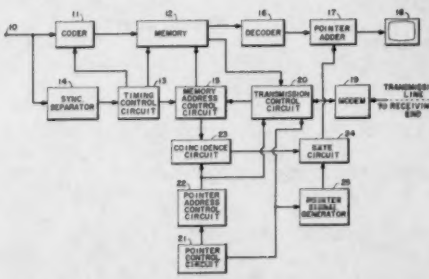
7. Apparatus for varying the size of objects displayed on a raster type video screen in proportion to an analog control voltage comprising: variable oscillator means for producing a size control signal having a frequency determined by said analog control voltage, said variable oscillator means including, a variable current source controlled by said analog control voltage, capacitor means for storing charge from said current source resulting in a stored voltage across said capacitor means, threshold means responsive to said stored voltage crossing high and low thresholds to produce said size control signal, and current sink means connected to said capacitor means for varying said stored voltage by periodically draining charge from said capacitor means in response to said size control signal, said apparatus further comprising picture memory means for storing addressable video resolution elements which form a video display, and counter means driven by said size control signal for generating addresses for said picture memory means whereby the frequency at which said video resolution elements are addressed determines the size of the objects displayed.

4,164,760

STATIONARY-PICTURE TRANSMISSION SYSTEM UTILIZING A DIGITAL MEMORY TECHNIQUE

Masao Inaba; Kazumi Yuasa, and Michiaki Sonoda, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1977, Ser. No. 856,036
Claims priority, application Japan, Nov. 30, 1976, 51-144205
Int. Cl.[2] H04N *5/22*
U.S. Cl. 358—183 **6 Claims**



1. A stationary-picture transmission system for transmitting a stationary picture signal from a transmitter through a narrowband transmission line to a receiver positioned at a distance from said transmitter, said transmission system including,

means for producing a digitized video signal representing said stationary picture;

first memory means for storing at least one field of said digitized video signal,

first read-out means for reading out the stored digitized video signal at a first scanning rate to produce a first read-out digitized video signal, said first read-out means including means for producing first read-out address data representing addresses of said first memory means from which said stored digitized video signal is read out,

means for transmitting said first read-out digitized video signal through said narrowband transmission line;

means for receiving the digitized video signal transmitted over said transmission line,

second memory means for storing the received digitized video signal at said first scanning rate,

second read-out means for reading out the stored digitized video signal from said second memory means at a second scanning rate to produce a second read-out digitized video signal, said second read-out means including means for producing second read-out address data representing addresses of said second memory means from which said stored digitized video signal is read out,

means for decoding said second read-out digitized video signal to an analogue stationary-picture signal, and

means responsive to said analogue stationary-picture signal for displaying said stationary picture transmitted over said transmission line characterized in that said transmission system further includes,

pointer producing means for producing pointer data representing a pointer to be displayed on said stationary picture and pointer-position data representing the position of said pointer on said stationary picture, said pointer data and said pointer-position data being transmitted by said transmitting means through said narrowband transmission line after the completion of the transmission of said stationary picture,

means for detecting the presence of said pointer data and said pointer-position data on said transmission line,

means responsive to said pointer data for producing a first pointer video signal representing said pointer to be displayed on said stationary picture; and

means responsive to said pointer-position data and said second read-out address data for adding said first pointer video signal to said analogue stationary-picture signal.

4,164,761

TELECINE APPARATUS HAVING IMPROVED REPRODUCTION DURING PANNING AND TILTING SCENES

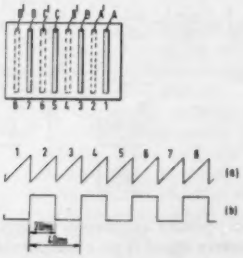
Raymond Matchell, Braughing, Nr. Ware, England, assignor to The Rank Organisation Limited, London, England

Filed May 18, 1978, Ser. No. 907,193

Claims priority, application United Kingdom, May 18, 1977, 20903/77

Int. Cl.[2] H04N *5/88*

U.S. Cl. 358—215 **10 Claims**



1. A method of improving the reproduction of a television picture derived from a cinema film by a telecine apparatus during a period of panning and/or tilting in the scene recorded on the cinema film, the method comprising shifting the scanning raster of the telecine apparatus in respect of at least selected television fields during said period in such manner that during a series of consecutive television fields an image of an object moving across the television picture is reproduced in the television picture in a greater number of positions along its direction of movement than the number of film frames from which the said series of consecutive television fields is derived.

4,164,762

FACSIMILE CONTROL APPARATUS

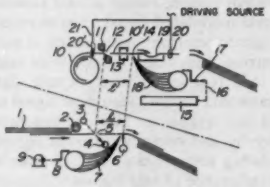
Kenji Fukuoka, Fussa, and Takayuki Anami, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1977, Ser. No. 849,115

Claims priority, application Japan, Nov. 12, 1976, 51-135265

Int. Cl.[2] H04L *13/04, 13/08*

U.S. Cl. 358—304 **3 Claims**



1. An improved control apparatus for use in a frequency band compression facsimile receiver adapted to generate a record signal and means for controlling and cutting of a web of material into a record sheet of a given length and means for advancement of said record sheet as cut; said receiver including: web roller means for advancing said web and cooperating with feed clutch means; said clutch means acting upon said roller means to control advancement of said web; means for cutting a sheet from said web record sheet feed signal means and record sheet roller means for advancing said cut record sheet in response to drive means; said improvement comprising: means for generating a halt signal for a given duration during actuation of said feed clutch, said halt signal acting to de-energizing advance of said web at the time of operation of a web sheet cutter; means for storing the record signal and record sheet feed signal received during generation of said halt signal; means associated with said receiver for interrupting reception of a record signal to said receiver and other signal means for transporting said record sheet.

4,164,763

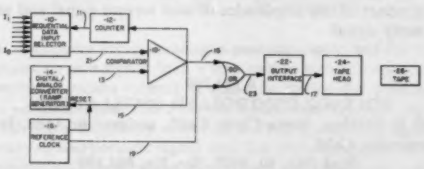
TIME SEQUENCED MULTIPLEXING METHOD OF RECORDING AND TRANSLATING DATA

Mario F. Briccetti, Syracuse, and Fredrick R. Eplett, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,179

Int. Cl.[2] G11B *5/00, 5/09*

U.S. Cl. 360—32 **18 Claims**



1. A method of recording and translating quantitative data for various events at predetermined periodic intervals over a time period which comprises the steps of:

(a) detecting the quantitative level of an event;

(b) creating an electric pulse for the event in response to a time dependent function of the quantitative level of the event and resetting the time dependent function;

(c) applying the pulse to a recording medium at a point on the medium a distance from a base reference point which distance is indicative of the quantitative level of the event;

(d) detecting the quantitative level of a different event;

(e) creating an electric pulse for the different event;

(f) applying the electric pulse to the recording medium at a point on the medium a distance from the point on the

medium created by the previous pulse which distance is indicative of the quantitative level of the different event;

(g) repeating steps (a) through (f) at predetermined periodic intervals; and

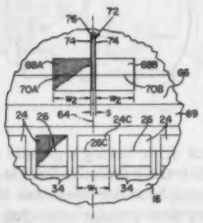
(h) translating the recording medium to indicate the quantitative level of the monitored events at the predetermined periodic intervals.

4,164,764

MAGNETIC HEAD POSITION REFERENCE SYSTEM

Kyriacos Joannou, Wayland, Mass., assignor to Pericomp Corporation, Natick, Mass.

Filed Jul. 11, 1977, Ser. No. 814,294
Int. Cl.[2] G11B *5/43, 5/84*
U.S. Cl. 360—77 **32 Claims**



1. In a system for recording a magnetic tracking medium adapted to serve as a position reference with respect to magnetic recording and readout apparatus; said system comprising:

a magnetic head including at least one read core having a read gap of width W_1 positioned for presentation to said tracking medium, said read gap being disposed symmetrically athwart the center line of said head and at right angles thereto;

said head further comprising a pair of first and second substantially identical write cores corresponding to said read core, said write cores including respective first and second mutually aligned write gaps symmetrically positioned for presentation to said tracking medium on opposite sides of said head center line, said write gaps being parallel to said read gap and being spaced therefrom in a direction parallel to said head center line;

said write gaps each having a width W_2 greater than W_1 and a mutual spacing S such that

$S \leqq 0.1W_1$,

and winding means carried by said write core for providing a magnetic flux in said write gaps upon energization;

whereby said read core is adapted to verify recording by said write cores on said tracking medium.

4,164,765

CAROUSEL TAPE SYSTEM

Walter Gysling, Excelsior, Minn., assignor to National Computer Systems, Inc., Minneapolis, Minn.

Filed Dec. 7, 1977, Ser. No. 858,605
Int. Cl.[2] G11B *15/68*
U.S. Cl. 360—92 **61 Claims**

1. Apparatus for storing and transferring electromagnetic information, comprising:

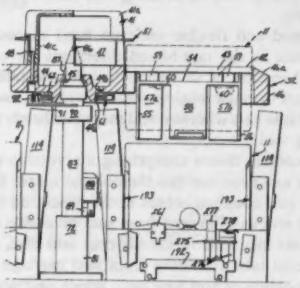
(a) carousel means for storing a plurality of electromagnetic tape cartridges in substantially vertical positions within an array of radial slots, the carousel means including a retaining gate for each slot that projects downwardly therefrom in cantilever fashion, each gate being laterally deflectable, each gate retaining the associated cartridge when in a nondeflected position and to release the associated cartridge when deflected;

(b) a control housing for rotatably carrying the carousel means, the control housing comprising

(i) at least one read/write station which has a read/write position;

(ii) indexing means for controllably rotating the carousel means to position a selected cartridge relative to the read/write station;

(iii) actuating means associated with the read/write station



for laterally deflecting the retaining gate of a cartridge which has been selectively positioned with respect thereto to release the cartridge from its slot;

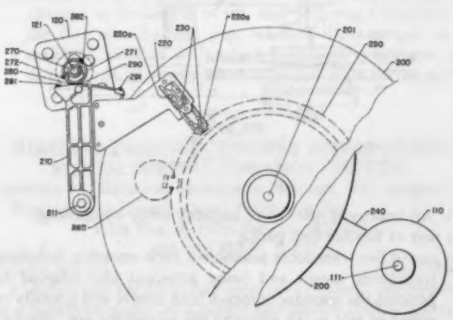
(iv) and transfer means associated with the read/write station and operable through cartridge load and unload cycles to retainably engage and move the released cartridge to the read/write position and permit the exchange of electromagnetic information, and to return the cartridge to its slot.

4,164,766

DISC MEMORY APPARATUS MAGNETIC HEAD CARRIAGE MANUAL CONTROL

Robert Kaseta, Stow; Lenn Daugherty, Northboro; Sigmund Hinlein; Michael Feldstein, both of Sudbury; Paul Otausky, Southboro; Harold Thackaberry, Franklin, and Robert E. Barrows, Hopedale, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 24, 1978, Ser. No. 899,043
Int. Cl.[2] G11B *5/48, 5/64, 17/00*
U.S. Cl. 360—97 **1 Claim**



1. In memory apparatus supported by a base and intended for use in a digital computer system; said apparatus comprising at least one spinable and non-flexible magnetic disc for recording digital information, said magnetic disc having outer and inner concentric adjacent areas thereon defined as operating and landing zone areas respectively, a track in the landing zone area being defined as a zero reference track; rotary means for accurately positioning magnetic heads relative to tracks on at least one surface of said disc, said rotary means comprising:

pivotable means, pivotably mounted on said base with pivot axis of said pivotable means substantially parallel to spin axis of said spinable magnetic disc, for supporting said magnetic head;

stepper motor means, including a rotational stepper motor mounted on said base with rotation axis of the shaft of said rotational stepper motor substantially parallel to said spin axis, for receiving electrical signals from said computer system and for step-rotating said shaft in response to said signals;

taut-biased and flexible inelastic band means substantially inelastic in the taut-biased directions for coupling rotational motion of said shaft to said pivotable means in a manner to cause motion of said pivotable means about said pivotable axis whereby said magnetic heads are positioned along said disc surface;

said pivotable means comprising a pivotable arm with said pivot axis near one end thereof and means for interacting with said coupling means at the other end thereof, a carriage arm cantilevered from said pivotable arm for holding said magnetic heads adjacent said disc, and two non-adjacent tabs extending from said carriage arm towards that portion of said base onto which said pivotable means is pivotably mounted; and

manually-adjustable, carriage arm control means rotatably mounted through said portion of said base and controllably engaging said tabs for permitting a human operator to (1) move said carriage arm to and lock said carriage arm in said landing zone position, (2) adjust said carriage arm to said zero reference track, and (3) establish travel-limits for said carriage arm during operation of said apparatus.

4,164,767

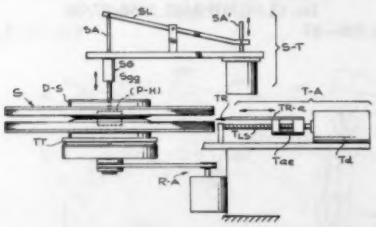
MASS STORAGE DEVICE

Ko K. Gyi, and Herbert U. Ragle, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 774,312, Mar. 4, 1977, Pat. No. 4,118,746. This application Dec. 23, 1977, Ser. No. 864,149

Int. Cl.[2] G11B *5/012, 5/54, 17/00, 21/08*

U.S. Cl. 360—98 **2 Claims**



1. An improved mass store memory array comprising:

a pair of flexible disk packs;

a pair of like transducer assemblies, each assembly including transducer means and being arranged and adapted to position the transducer means both axially and laterally of either of said packs whereby the assemblies are "shared" by the two packs;

each pack comprising a plurality of flexible recording disks and intermediate radially-vented separator means, these being assembled together and arranged to form a co-rotatable stack with a center-bore of prescribed length and diameter; and

a pair of partition means, each operatively associated with a respective pack and being adapted for pneumatic disk separation and partition.

4,164,768

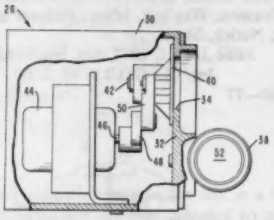
DUAL STAGE FLOW CONTROLLER FOR SELF-VENTILATING DISK PACK

Donovan M. Janssen, Boulder, Colo., and Anton J. Radman, Jr., Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1978, Ser. No. 939,155

Int. Cl.[2] G11B *5/016*

U.S. Cl. 360—99 **11 Claims**



1. In a disk pack drive having a plenum chamber communicating with a rotary self-ventilated flexible disk pack to supply air from the atmosphere for operation thereof, first means defining a primary flow passage extending between the atmosphere and said plenum chamber, a first valve member disposed in said primary flow passage and being cooperable with said first means to control the flow of air through said primary flow passage, said first valve member being selectively movable between open and closed positions, said first means and said first valve member being operative when said first valve member is in an open position to allow air to flow through said primary flow passage at a flow rate and pressure to maintain said disk pack in an above-bistable operating condition characterized by:

said first means and said first valve member being operative upon movement of said first valve member into said closed position to shut off the flow of air through said primary passage allowing said rotary disk pack to pump air from said plenum chamber and create a relatively high vacuum to cause an access opening to rapidly form between preselected disks;

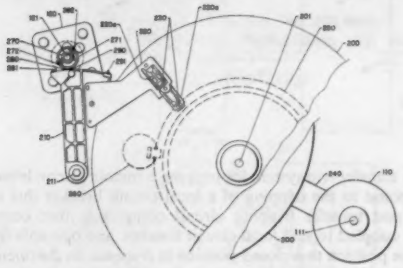
second means defining a secondary flow passage parallel to said primary flow passage and communicating between said plenum chamber and the atmosphere, a second valve member disposed in said secondary flow passage and co-operable with said second means to control the flow of air through said secondary flow passage into said plenum chamber, said second valve member being movable between closed and open positions; said second valve member and said second means preventing the flow of air through said secondary flow passage when said second member is in said closed position, said second valve member and said second means restricting the flow of air through said secondary flow passage when said second valve member is in said open position so as to create in said plenum chamber a partial vacuum lower than said relatively high vacuum and within a range creating a bistable condition so as to maintain said access opening;

and third means responsive to the pressure within said plenum chamber for controlling movement of said second valve member, said third means being operative in response to closing of said first valve member to move said second valve member from said closed position to said open position in such a manner as to cause a time delay allowing said preselected disks to move to a fully open access opening while said relatively high vacuum is in said plenum chamber.

4,164,769
CROSS BAND COUPLING FOR STEPPER-MOTOR-DRIVEN, RIGID MAGNETIC DISC

Robert G. Kaseta, Stow; Lenn Daugherty, Northboro; Sigmund Hinlein; Michael Feldstein, both of Sudbury; Paul Otavsky, Southboro; Harold Thackaberry, Franklin, and Robert E. Barrows, Hopedale, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 24, 1978, Ser. No. 899,044
Int. Cl.[2] G11B *5/48, 5/54, 17/00*
U.S. Cl. 360—106 6 Claims



1. In memory apparatus including at least one spinable and non-flexible magnetic disc, said apparatus supported by a base and intended for use in a digital computer system, rotary means for accurately positioning magnetic heads relative to tracks on at least one surface of said disc, said rotary means comprising:

pivotable means, pivotably mounted on said base with pivot axis of said pivotable means substantially parallel to spin axis of said spinable magnetic disc, for supporting said magnetic heads;

stepper motor means, including a rotational stepper motor mounted on said base with rotation axis of the shaft of said rotational stepper motor substantially parallel to said spin axis, for receiving electrical signals from said computer system and for step-rotating said shaft in response to said signals;

taut-biased and flexible band means substantially inelastic in the taut-biased directions for coupling rotational motion of said shaft to said pivotable means in a manner to cause hysteresis free motion of said pivotable means about said pivotable axis whereby said magnetic heads are positioned along said disc surface;

said pivotable means comprising a pivotable arm with said pivot axis near one end thereof and having means for interacting with said coupling means at the other end thereof, and a carriage arm cantilevered from said pivotable arm for holding said magnetic heads adjacent thereto;

said stepper motor means further including pulley means, including a pulley fixedly mounted around said shaft and rotatable therewith, said pulley being formed from a circular disc-shaped member through which said shaft protrudes and from a circular wall having an aperture, said wall being connected at the periphery of said circular member and orthogonal to the plane of said member, for connecting to said band means;

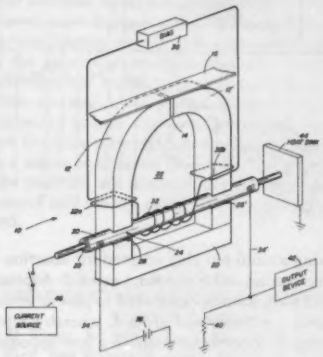
said pulley means including a coil spring contained within said wall and encircling said shaft, one end of said spring being fixed to said pulley and the other end protruding unconstrained through said aperture; and

said band means comprising two separate crossed metal bands, both being connected near one of their respective ends at non-adjacent connecting points on said interacting means, one of said bands being connected near its other end to the outside surface of said wall and the other of said bands being connected near its other end to the protruding end of said spring, the bias on said spring being so oriented that it imposes a taut condition on said other of said bands which in cooperation with said interacting means and said wall imposes a taut condition on said one of said bands.

4,164,770
THIN FILM MAGNETORESISTIVE HEAD

Frederick J. Jeffers, Escondido, Calif., assignor to Eastman Technology, Inc., Rochester, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,109
Int. Cl.[2] G11B *5/30*
U.S. Cl. 360—113 4 Claims



1. In a magnetic playback head of the type having:

(a) a pair of magnetic means for defining a transducer gap, and

(b) means for producing a signal proportional to flux entering said gap,

the improvement wherein said signal producing means comprises:

(a) an elongated element connected across said gap, said element being comprised of an electrically non-conductive support and a thin single domain magnetic film coextensively formed thereabout, the easy axis of said film being about the longitudinal axis of said element and in a plane that is perpendicular to said longitudinal axis,

(b) means for applying a magnetic bias generally in the direction of the longitudinal axis of said element, so as to tilt the easy axis of said film in the direction of the hard axis of said film and

(c) means for detecting resistance changes of said film due to changes in the degree of tilt, said tilt being a function of the flux entering said gap, whereby flux patterns in a magnetic medium with which said head cooperates are directly measurable by virtue of said changes in resistance.

4,164,771
WIRELESS EMERGENCY POWER INTERRUPTING SYSTEM FOR MULTIBRANCH CIRCUITS

Theodore M. Heinrich, Murrysville Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

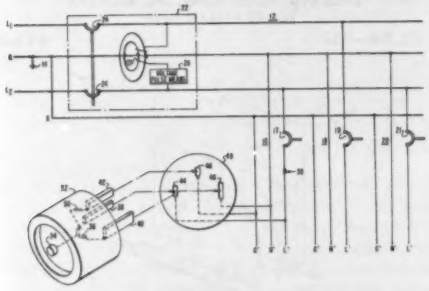
Filed Dec. 9, 1977, Ser. No. 859,075
Int. Cl.[2] H02H *3/16*
U.S. Cl. 361—1 16 Claims

1. Apparatus for providing emergency power interruption on a multibranch electrical power distribution system having a main phase conductor and a main neutral conductor grounded upstream from the branch circuits, a plurality of branch circuit interrupters connected in the phase conductor of the branch circuits, and a plurality of receptacles for receiving power plugs of electrical equipment to be powered by the circuit, said apparatus comprising:

a main circuit interrupter connected in the electrical power distribution system downstream from the grounding point of the main neutral conductor, said main circuit inter-

rupter comprising means for deenergizing the electrical power distribution system if the neutral conductor of the system becomes grounded through a low-impedance path; and

means located downstream from said main circuit interrupter for deliberately providing a low-impedance path between said neutral conductor and ground, said means



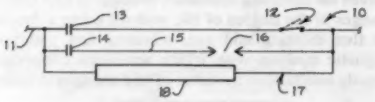
comprising a multi-pin plug adapted for insertion into any of the receptacles and comprising a switch disposed in said plug, said switch being connected to pins in contact with the neutral conductor and ground, whereby actuation of said switch is operable to establish a low impedance neutral-to-ground path and cause said main circuit interrupter to deenergize the system.

4,164,772

AC FAULT CURRENT LIMITING CIRCUIT

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 17, 1978, Ser. No. 897,040
Int. Cl.[2] H02H *9/02*
U.S. Cl. 361—58 **7 Claims**



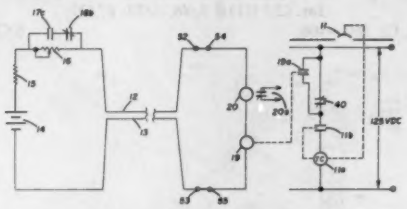
1. An AC fault current limiting circuit for rapidly inserting sufficient impedance into a circuit in response to occurrence of a fault in the last named circuit for limiting instantaneous peak current to a maximum permissible value, said limiting circuit comprising first, second and third branches to be coupled in parallel, said first branch comprising a portion of the second named circuit, a first capacitor and a high speed circuit breaker switch disposed in series in said first branch, a second capacitor and means in series therewith in said second branch serving to inhibit current flow from a source of voltage thereacross below a predetermined threshold and to break down in response to application of a voltage thereto in excess of said predetermined threshold to transmit current via said second branch, and impedance means in said third branch serving to inhibit formation of a time constant in conjunction with said second capacitor as said first capacitor discharges into said second capacitor for quickly subjecting said circuit breaker switch to current zero.

4,164,773

TRANSFER TRIP CIRCUIT WITH PILOT WIRE MONITORING

James P. DeLacy, Havertown, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 3, 1978, Ser. No. 883,304
Int. Cl.[2] H02H *7/26*
U.S. Cl. 361—69 **8 Claims**



1. A transfer trip system for tripping a remote circuit breaker in response to the tripping of a local circuit breaker due to a fault; said transfer tripping circuit comprising first contact means coupled to said local circuit breaker, and operable from an open position to a closed position in response to the opening of said local circuit breaker; a pair of parallel pilot wires having respective first ends disposed near said local circuit breaker, and respective second ends disposed near said remote circuit breaker; a series-connected pilot wire voltage source and resistor means connected in series with said first ends of said pair of pilot wires; said first contact means connected in parallel with said first resistor means; a first coil and second coil means connected in series with one another and with said second ends of said pair of pilot wires; said first coil being connected to alarm means, and operating said alarm means when the current in said first coil is lower than a first value; said second coil being coupled to said remote circuit breaker, and being operable to trip said remote circuit breaker when the current therethrough exceeds a second current value; said pilot wires carrying a current which is above said first current value and below said second current value when said first contact means is open, and carrying a current which is above said second current value when said first contact means is closed.

4,164,774

ELECTRODE FOR TELEPHONE PROTECTOR MODULES

William V. Carney, Valley Stream, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,774
Int. Cl.[2] H02H *3/22*
U.S. Cl. 361—119 **3 Claims**

1. In a telephone line protective device including a pair of spaced electrodes and an insulating sleeve mounting one of said electrodes and forming an inner gap between said pair of electrodes, the improvement comprising: at least one of said opposed surfaces having a plurality of radially arranged grooves extending into the surface thereof to define a corresponding plurality of pie-shaped sectors therebetween; said electrode

having a principal longitudinal axis, there being an axially aligned through bore extending from one of said opposed surfaces, and communicating at one end thereof with said radially arranged grooves; whereby during arcing between said opposed surfaces, venting takes place in both axial and radial directions with respect to said principal axis.

4,164,775

DEGAUSSING CIRCUIT IN A COLOR TELEVISION RECEIVER

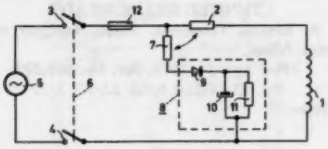
Frans Slegers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 20, 1977, Ser. No. 808,043

Claims priority, application Netherlands, Jul. 14, 1976, 7607758; Dec. 24, 1976, 7614382

Int. Cl.² H01F *13/00*

U.S. Cl. 361—150 **9 Claims**



1. A degaussing circuit for demagnetizing ferromagnetic components in a colour television receiver, said circuit comprising a rectifier circuit, the series arrangement of a degaussing coil and a first thermistor with a positive temperature coefficient, said series arrangement is connectable to at least one terminal of an alternating current voltage source, and furthermore comprising a resistance element means for contributing to heating of the first thermistor and for protecting said rectifier circuit comprising a second thermistor with a negative temperature coefficient which is connectable to a terminal of the alternating current voltage source and which is thermally coupled to the first thermistor with a positive temperature coefficient, the second thermistor being connected to said rectifier circuit in the receiver.

4,164,776

ELECTRONIC COMBINATION CONTROLLED MEANS

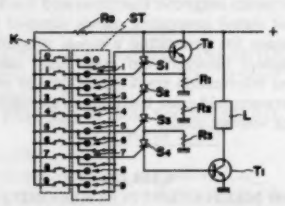
Sigekazu Nagayama, Yokohama, Japan, assignor to Hisao Nakamura, Tokyo, Japan

Filed Nov. 7, 1977, Ser. No. 849,517

Claims priority, application Japan, Nov. 10, 1976, 51-134148; Dec. 28, 1976, 51-157408

Int. Cl.² E05B *49/00*; H01H *47/00*

U.S. Cl. 361—172 **3 Claims**



1. An electronic combination controlled means comprising:

a plurality of thyristors connected in series, with the cathode of each of said thyristors connected to the anode of the next succeeding thyristor;

a plurality of self-holding resistors, each connected between a corresponding anode-cathode connection of said plurality of thyristors and ground and each having a resistance for conducting a current therethrough greater than the sustaining current of one of said thyristors;

a current limiting resistor having a resistance for conducting a current therethrough greater than the minimum gate turn-on current of one of said thyristors and less than twice said minimum gate turn-on current;

a current actuated means connected to the cathode of the last of said plurality of thyristors for being actuated when said last thyristor is turned on;

a thyristor turn-off means connected across the first of said thyristors for short circuiting the first of said thyristors when actuated thereby interrupting the current through and rendering nonconductive said first thyristor; and

a plurality of key type switches including a first subset of key type switches equal in number to the number of said thyristors, each having a first terminal connected to said current limiting resistor and a second terminal connected to the gate of a corresponding one of said plurality of thyristors for turning on said corresponding thyristor when actuated and a second subset of key type switches connected to said thyristor turn-off means for actuating said thyristor turn-off means, whereby said current actuated means is actuated only when said first subset of key type switches are actuated in a predetermined order and none of said second subset of key type switches are actuated.

4,164,777

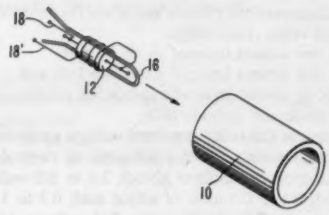
SUPERCONDUCTING SWITCH INCORPORATING A STEERING DIODE

George D. Kneip, Jr., Menlo Park; Marvin H. Anderson, Mountain View, and Robert E. Gang, Sunnyvale, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 21, 1978, Ser. No. 879,294

Int. Cl.² H01H *1/02, 1/62*

U.S. Cl. 361—331 **5 Claims**



1. A persistence switch for effecting the transition between persistent and non-persistent modes in a superconducting circuit comprising

a diode having leads,

a superconductive material disposed in thermal contact with said diode, said material forming two superconductive leads of said switch, and two other leads connected to the respective leads of said diode, said other leads formed of a material exhibiting lower thermal conductivity than the leads of said diode.

4,164,778

PRINTED CIRCUIT BOARD

Hitoshi Sawairi; Fuminori Hirose, and Kaoru Konishikawa, all of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 15, 1977, Ser. No. 816,197

Claims priority, application Japan, Jul. 20, 1976, 51-97150[U]; Jul. 20, 1976, 51-97151[U]; Jul. 20, 1976, 51-97152[U]

Int. Cl.² H05K *5/00*

U.S. Cl. 361—409 **14 Claims**

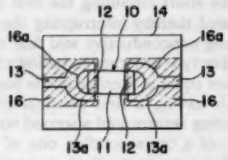
1. A printed circuit board comprising:

an electrically insulative substrate of synthetic resin;

at least one pair of spaced electroconductive layers on said insulative substrate;

a wireless component bridging said spaced electroconduc-

tive layers, said component having at least one pair of spaced terminal electrodes, one terminal on each end of said component and each of said terminal electrodes being in contact with and soldered to one of said electroconductive layers; and



each of said electroconductive layers having a substantially rounded portion at the portion thereof soldered to said terminal electrodes, said rounded portion having a width and a surface area no larger than the surface area and width of said terminal electrode to which it is soldered.

4,164,779

ALUMINUM ELECTROLYTIC CAPACITOR FOR RATED VOLTAGES OF AT LEAST 160 V

Wilhelm Lauer, Giengen, and Rudolf Soldner, Heidenheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,506

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641939

Int. Cl.[2] H01G *9/00*

U.S. Cl. 361—433 **1 Claim**

1. An aluminum electrolytic capacitor for rated voltages of at least 160 volts, comprising:

at least one wound layer of an anode foil;

at least one wound layer of a cathode foil; and

at least one wound layer of a spacer foil positioned between said anode and cathode foils;

said spacer foil being saturated with an operating electrolyte consisting, for each kilogram of electrolyte, 9.0 to 11.0 mols of ethylene glycol; 2.0 to 5.0 mols of boric acid; 0.1 to 0.5 mols of adipic acid; 0.9 to 1.5 mols of ammonia; 0.05 to 0.15 mols of phosphoric acid and 4.0 to 6.0 mols of water.

4,164,780

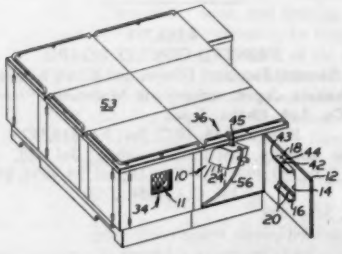
APPARATUS FOR A REMOVABLE LAMP

Thomas P. Muller, and Philip J. Blatner, both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 16, 1978, Ser. No. 916,457

Int. Cl.[2] B60Q *1/00*

U.S. Cl. 362—64 **9 Claims**



1. A housing assembly (10) for removably connecting a lamp (11) to a frame (12) having an opening (14) and a first flange (16) having one of a mateable protrusion (20) and opening (22), comprising:

a lamp housing (24) having first and second opposed walls (28,30) and a front wall (32) and being of a size sufficient for substantially enclosing the lamp (11) and movable between a first position (34) at which the front wall (32) covers the opening (14) of the frame (12) and a second position (36) at which the front wall (32) is spaced from the opening (14) of the frame (12), said first wall (28) having the other of the mateable protrusion (20) and opening (22), said protrusion (20) and opening (22) being mated at the first position (34) of the lamp housing (24); and

means (26) for removably connecting the lamp housing (24) to the frame (12) and maintaining said lamp housing (24) in the first position (34).

4,164,781

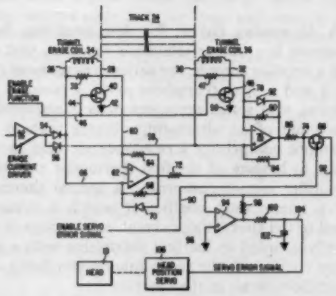
TRACK SERVOING SYSTEM USING SIGNALS FROM TUNNEL ERASE HEADS

Timothy R. Brown, Westboro, Mass., assignor to Decitek, Worcester, Mass.

Filed Apr. 11, 1978, Ser. No. 895,393

Int. Cl.[2] G11B *5/02, 21/10, 5/27*

U.S. Cl. 360—77 **7 Claims**



1. A position servo control system for a magnetic read/write head for maintaining said read/write head centered over a recorded information track comprising:

erase head means positioned adjacent said read/write head for erasing spurious recorded signals on opposite sides of said information track when said read/write head is in a write mode,

first electronic switching means coupled to said erase head means for switching said erase head means from an erasing mode to a track sensing mode, wherein said erase head means couples magnetic flux from said track; and,

servo error signal generating means coupled to said erase head means for generating a signal proportional to the misalignment between said erase head means and said recorded information track based on the magnetic coupling between said erase head means and said track during the track sensing mode.

4,164,782

LOCKING MECHANISM FOR RECORD PACKAGE

Myron C. Stewart, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,303

Int. Cl.[2] G11B *5/82, 25/04*

U.S. Cl. 360—133 **4 Claims**

1. A protective cover for a disc record for use with a record player having an unlocking member; said cover comprising:

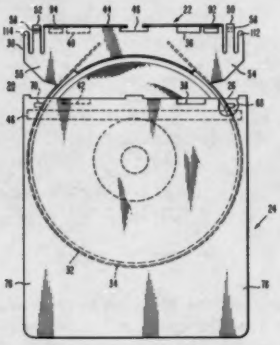
(A) a jacket having an edge opening in communication with a record enclosing cavity; and

(B) a record retainer removably received within said jacket and having a major surface; said retainer being adapted to

cooperate with the edge opening of said jacket to form a substantially sealed record enclosing cavity, and having a configuration for restraining planar movement of an enclosed record relative to said retainer;

said retainer being provided with an integrally molded, flexural locking member having a free end which is subject to deflection in a direction at right angles to said major surface of said retainer;

a protruding element being disposed on said flexural locking member near said free end thereof, and having an edge remote from said free end which is disposed obtusely relative to said major surface of aid retainer such that engagement between said obtusely disposed edge and an interior surface of said jacket causes deflection of said flexural locking member to permit insertion of said retainer into said jacket;



said protruding element further having an edge adjacent to said free end of said flexural locking member, which is disposed substantially perpendicularly to said major surface of said retainer;

said jacket being provided with a portion defining a substantially perpendicular edge adjacent to said edge opening of said jacket for engagement with said perpendicularly disposed edge of said flexural locking member upon arrival of said retainer at a fully inserted position in said jacket to preclude removal of said retainer from said jacket during said engagement between said perpendicular edges of said retainer and said jacket;

said free end of said flexural locking member being adapted for arrival in the path of said player unlocking member during insertion of said cover into said player for causing disengagement between said retainer perpendicular edge and said jacket perpendicular edge to permit subsequent separation of said retainer from said jacket.

4,164,783

SPORT LIGHT AND BALLAST MODULE

Donald Wandler, South Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed May 1, 1978, Ser. No. 901,811
Int. Cl.[2] H01R *33/00*
U.S. Cl. 362—226 **6 Claims**

1. A light fixture including in combination:

a weather-proof housing enclosing electrical components including ballast means, said housing having a side wall;

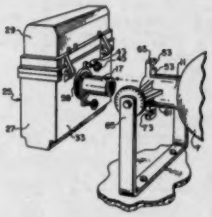
a lamp receptacle mounted on said side wall extending outwardly therefrom substantially at right angles thereto;

a pair of elongated protrusions of predetermined length projecting outwardly from said side wall and located on opposite sides of said lamp receptacle, flat surface means surrounding said lamp receptacle;

a reflector member having a reflector portion and a neck portion extending outwardly therefrom with the free end of said neck portion being opened;

fastening means located adjacent the free end of said neck portion, said fastening means including first and second arms extending radially outwardly therefrom in different directions, each arm defining a cavity opening in the same direction as the free end of said neck portion, and a slot communicating with said cavity, said slot for receiving an elongated fastener extending parallel to the axis of the neck, and the cavity for receiving a corresponding elongated protrusion mounted on said housing;

gasket means disposed between said flat surface means surrounding said lamp receptacle and said free end of said neck portion for providing a weather-proof seal;



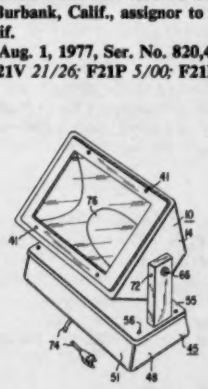
said flat surface means surrounding said lamp receptacle mating with the free end of said neck portion and said lamp receptacle being received in said neck portion upon joining said lamp housing and said reflector member, with said protrusions being received in said cavities formed in said fastening means, with said elongated fasteners being received in said slots subsequent to joining said ballast housing and reflector member and rotating one of said ballast housing and reflector member relative to the other to secure the latter in a sealed condition.

4,164,784

ADJUSTABLE ILLUMINATING DEVICE

Milenko Jaksich, Burbank, Calif., assignor to Sight Lite, Inc., Los Angeles, Calif.

Filed Aug. 1, 1977, Ser. No. 820,447
Int. Cl.[2] F21V *21/26*; F21P *5/00*; F21M *3/18*
U.S. Cl. 362—282 **7 Claims**

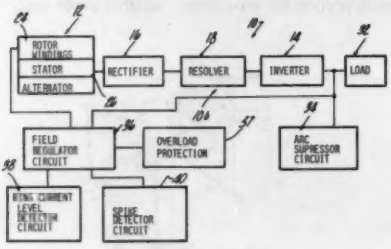


1. In an illuminating device, a lamp housing including an enclosure having end walls provided with axially aligned openings therethrough and a window opening on one side thereof, means for mounting said housing for rotation on an axis paralleling the plane of said window opening, said means comprising a pair of spaced support legs, a pair of cylindrical bearing posts coaxially mounted on said legs opposite and extending toward each other; said posts engaging the aligned openings in said lamp housing, a lamp mounting carried by one of said bearing posts interiorly of said housing, and means for restraining said one of said bearing posts against rotation with respect to the support leg on which it is mounted while permitting rotation of said housing on said bearing posts.

4,164,785
MULTIPHASE TO SINGLE PHASE AND FREQUENCY CONVERTER SYSTEM

Thomas A. Young, Burton, and Jay W. Gustin, Mantua, both of Ohio, assignors to Tenna Power Corporation, Cleveland, Ohio

Continuation of Ser. No. 726,918, Sep. 27, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,888
Int. Cl.[2] H02H 7/10; H02P 9/10, 7/66
U.S. Cl. 363—50 31 Claims



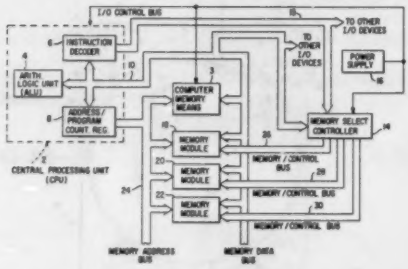
1. An energy conversion system for converting a high frequency alternating output potential from an alternator to a single phase, low frequency, alternating output for a load, including rectifying means connected to the output from the alternator to produce a unidirectional output, means connected with said rectifying means for controlling said rectifying means to provide a plurality of unidirectional waves, inverter means for inverting alternate ones of said waves whereby an alternating output wave is provided, arc suppressor circuit means connected to the load for providing a low impedance shunt path around said rectifying means and said inverter means at a preselected time after each of said unidirectional waves, and spike detector means connected to the load and responsive to a condition indicative of an excessive voltage condition for disabling the alternator, said spike detector means comprising a breakdown device connected across the load and having a bipolar breakdown characteristic for breaking down in response to potentials of a preselected high magnitude, a positive temperature coefficient resistor having a sharp resistance rise characteristic being physically connected to said breakdown device and responding to the temperature rise of said breakdown device during breakdown for providing a sharp change in resistance and actuating means responsive to said sharp change in resistance for opening said field and shutting down said alternator.

4,164,786
APPARATUS FOR EXPANDING MEMORY SIZE AND DIRECT MEMORY ADDRESSING CAPABILITIES OF DIGITAL COMPUTER MEANS

Bernard P. Gollomp, Far Rockaway, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Apr. 11, 1978, Ser. No. 895,167
Int. Cl.[2] G06F 1/00
U.S. Cl. 364—200 5 Claims

3. Digital computer means, comprising:
a central processing unit;
memory data signal transmitting means connected to the central processing unit;
memory address signal transmitting means connected to the central processing unit;
computer memory means actively connected to both of said signal transmitting means;
at least one memory module passively connected to both of said signal transmitting means;
a power supply;
input/output control signal transmitting means connected to the central processing unit;
controller means connected to the power supply, to the memory data signal transmitting means, to the input/output control signal transmitting means and to the memory module, and responsive to signals transmitted by both of said signal transmitting means for being rendered in a control state whereby a power signal and a memory access control signal are transmitted from the controller to the memory module,
the controller means including a control register connected to the memory data signal transmitting means and to the input/output signal transmitting means, and responsive to the signals transmitted by both of said means for being rendered in a control state to provide a memory access control signal, switching means normally in a non-conductive state connected to the power supply and to the control register and responsive to the memory access

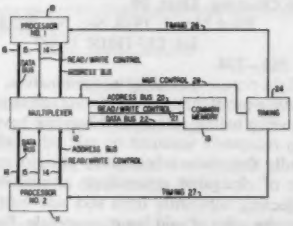


control signal for being rendered conductive and for passing a power signal, and the memory module connected to the control register and to the conductive switching means and responsive to the power signal and the memory access control signal for being actively connected to the memory address and memory data signal transmitting means; and
the memory module responsive to the signals transmitted thereto for being actively connected to the memory address and memory data signal transmitting means in addition to the memory means being actively connected to both of said signal transmitting means for expanding the direct addressing range and memory size of the computer means.

4,164,787
MULTIPLE MICROPROCESSOR INTERCOMMUNICATION ARRANGEMENT

William L. Aranguren, Sayreville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1977, Ser. No. 849,894
Int. Cl.[2] G06F 13/06
U.S. Cl. 364—200 9 Claims



1. A multiple microprocessor interconnection arrangement comprising
at least a first and a second microprocessor unit, each microprocessor unit being adapted to concurrently perform a

different function from that being performed by the other microprocessor units;

an interconnection channel comprising a memory unit connected to each of said at least first and second microprocessor units and a multiplexer disposed between each of said first and second microprocessor units and said memory unit, said memory unit including a plurality of memory locations accessible to each of said at least first and second microprocessor units; and

timing means connected to each of said at least first and second microprocessor units and said multiplexer of the interconnection channel, said timing means being capable of generating timing signals which both produce a normal operational timing cycle for each microprocessor unit which is offset by a predetermined amount from the timing cycle of each of the other microprocessor units and cause the multiplexer to sequentially connect each of said at least first and second microprocessor units to said memory unit for accessing and performing a read or write function in a desired memory location in said memory unit during a predetermined corresponding portion of each microprocessor unit's timing cycle which does not overlap the corresponding portion of another microprocessor unit's offset timing cycle.

4,164,788

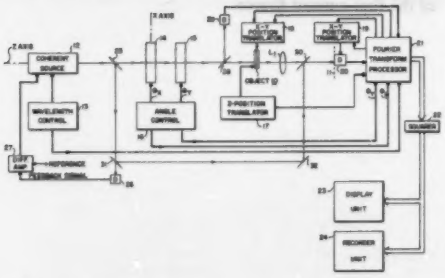
SUPER-RESOLUTION IMAGING SYSTEM

Atul Jain, 1545 E. Mendocino Rd., Altadena, Calif. 91001

Filed Oct. 13, 1976, Ser. No. 731,986

Int. Cl.² G06G *7/19*; G02B *27/10*

U.S. Cl. 364—515 **30 Claims**



4. A method for enhancing the creation of an image at a plane comprised of the steps of

radiating an object with a plane wave field from a coherent source at a selected angle θ_x with respect to a Z axis normal to the object and in the direction to the object from said source in a plane defined by an X axis, where said X and said Z axes are perpendicular and perpendicular to a Y axis to define an X–Y plane parallel to said object and an X–Z plane of said angle, θ_x,

varying the spatial phase relationship of the radiating wave field by varying at least one parameter selected from the wave field frequency and the selected angle of radiation,

detecting the wave field of radiation at said selected point as a function of the variable parameter selected while said selected angle θ_x is being varied, and

computing a Fourier transform of the detected wave field or intensity of a selected point in said plane with respect to the variable parameter for synthesis of a high resolution image at said point.

4,164,789

ELECTRONIC APPARATUS FOR DEALING WITH NUMERICAL INFORMATION

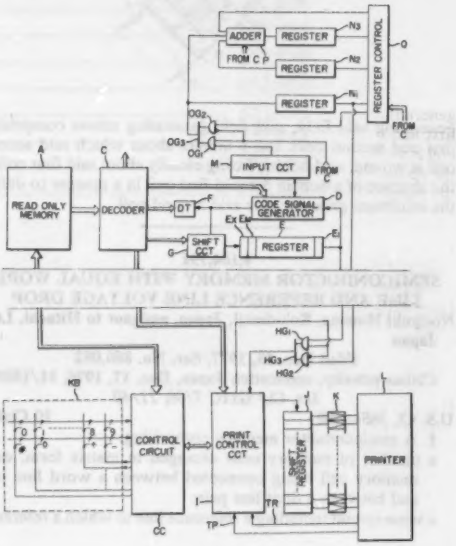
Sigeru Toyomura, Kawasaki, and Tsuyoshi Kawanabe, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 730,083, Oct. 6, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,503

Claims priority, application Japan, Oct. 23, 1975, 50-127770

Int. Cl.² G06F *3/00, 15/20*

U.S. Cl. 364—710 **9 Claims**



1. Electronic calculating apparatus for dealing with numerical information comprising:

a key input device provided with numerical keys for entering numerical data signals, a decimal point key for entering a decimal point signal and instruction keys for entering instruction signals;

a first memory for storing numerical data signals and data classification mark signals, wherein the data classification mark signals are represented by decimal point signals entered by said decimal point key;

a second memory for storing numerical data signals and a single decimal point signal;

control means for causing said first memory to store a plurality of data classification mark signals and for causing said second memory to store a single decimal point signal providing a distinction between the integer and decimal portions of the numerical data, when said decimal point key is depressed repeatedly; and

means, responsive to the operation of a specified one of said instruction keys, for reading out the signals stored in said first memory.

4,164,790

MAGNETIC BUBBLE PACKAGING ARRANGEMENT

Paul C. Michaelis, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

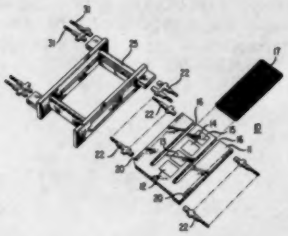
Filed Dec. 27, 1977, Ser. No. 864,311

Int. Cl.² G11C *19/08*

U.S. Cl. 365—2 **10 Claims**

1. A magnetic bubble memory including a layer of material

in which magnetic bubbles can be moved, and means coupled to said layer for moving said bubbles therein, said means comprising a pattern of elements responsive to a magnetic field reorienting cyclically in the plane of said layer for generating moving magnetic pole patterns and field generating means for



generating said field, said field generating means comprising first and second coils and a bobbin about which said second coil is wound, said bobbin fitting closely about said first coil in the absence of a bobbin for said first coil in a manner to define the minimum geometry for said second coil.

4,164,791

SEMICONDUCTOR MEMORY WITH EQUAL WORD LINE AND REFERENCE LINE VOLTAGE DROP

Noriyuki Homma, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

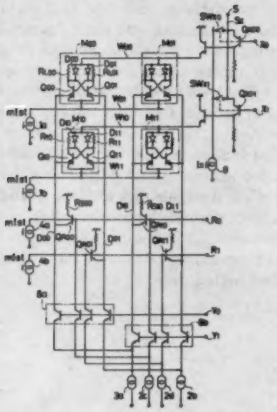
Filed Dec. 13, 1977, Ser. No. 860,092
Claims priority, application Japan, Dec. 17, 1976, 51/150943
Int. Cl.[2] G11C *7/00, 11/40*
U.S. Cl. 365—190 **10 Claims**

1. A semiconductor memory comprising:

a number of memory cells arranged in matrix form, each memory cell being connected between a word line pair and between a digit line pair;

a sense circuit including a reference line to which a reference voltage is applied, and sense elements connected to both the reference line and the digit line to produce an output in response to the potential on the reference line relative to the potential applied to the memory cell;

first current source means, each connected to one line of the word line pair, for providing a constant current flowing from one line of the word line pair through each of memory cells to the other line of the word line pair; and



second current source means, each connected to the reference line, for providing a constant current flowing therethrough to produce along the reference line a voltage drop substantially equal to the voltage drop developed along the word line due to the current provided by means of the first current source.

DESIGN PATENTS

GRANTED AUG. 14, 1979

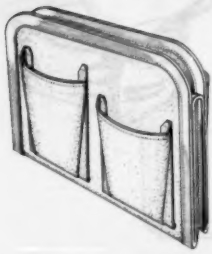
ERRATA

For CLASS	See PATENT NO.
D09–154	252,603
D06–005	252,608
D22–023	252,639
D23–149	252,640
D23–151	252,641
D28–009	252,642
D30–015	252,643
D15–092	252,655

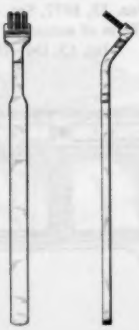
DESIGNS

AUGUST 14, 1979

252,596
PURSE INSERT
Emy Adler, 5400 Lindley Ave., Encino, Calif. 91316, and Phyllis Decker, 13934 Bora Bora Way, Marina del Rey, Calif. 90291
Filed Feb. 18, 1977, Ser. No. 769,938
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—54

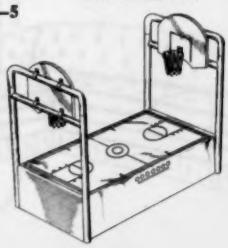


252,597
PLAQUE REMOVAL BRUSH
Henry A. Holzwarth, Bayside, and John D. Wark, Freeport, both of N.Y., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Sep. 30, 1977, Ser. No. 838,439
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



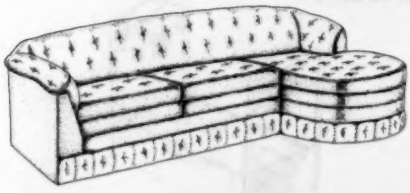
252,598
CHILD'S BED
Virgil R. Carter, 505 N. Lakeshore Dr., Chicago, Ill. 60611
Filed Jun. 23, 1977, Ser. No. 809,178
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—5

252,599
CHILD'S BED
Virgil R. Carter, 505 N. Lakeshore Dr., Chicago, Ill. 60611
Filed Jun. 23, 1977, Ser. No. 809,180
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—5



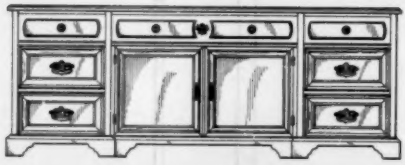
252,600
AUTOMOBILE TIRE DISPLAY STAND
John Gibson, Long Island, N.Y., assignor to Central States Diversified, Inc., New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,439
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—23

252,601
SOFA
Michael A. Bick, Manhattan Beach, Calif., assignor to Shelly & Anderson Furniture Mfg., Co., Inc., Compton, Calif.
Filed Feb. 3, 1978, Ser. No. 874,821
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



252,602
NOVELTY CHAIR
Umberto J. Cirrone, 1774 Turnpost La., Hacienda Heights, Calif. 91745
Filed Apr. 25, 1977, Ser. No. 790,283
The portion of the term of this patent subsequent to Aug. 14, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

252,603
CABINET
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,686
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



252,604

BEVERAGE SERVER

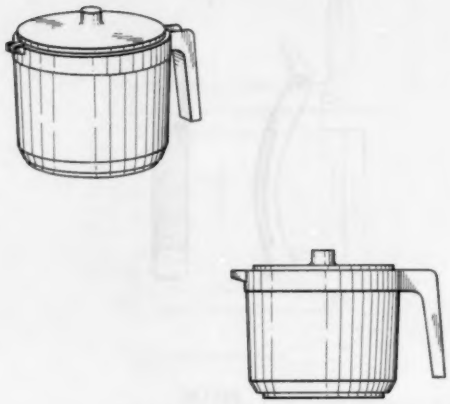
James E. Harris, Hermitage, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Jun. 10, 1977, Ser. No. 806,088

Term of patent 14 years

Int. Cl. D7—*01*

U.S. Cl. D7—65



252,605

PORTABLE TEMPERATURE CONTROLLED CONTAINER

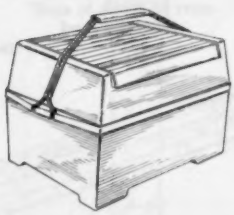
Louis J. Corini, Philadelphia, Pa., assignor to Fogel Commercial Refrigerator Company, Philadelphia, Pa.

Filed Mar. 2, 1978, Ser. No. 883,045

Term of patent 14 years

Int. Cl. D7—*07*

U.S. Cl. D7—77



252,606

SPOON OR SIMILAR ARTICLE OF FLATWARE

Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,995

Term of patent 14 years

Int. Cl. D7—*03*

U.S. Cl. D7—137

252,607

SPOON OR SIMILAR ARTICLE OF FLATWARE

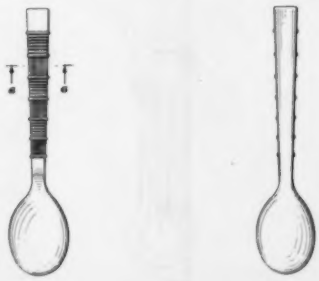
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,997

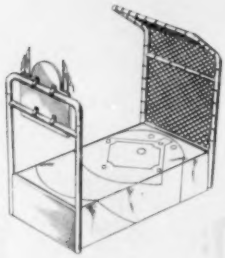
Term of patent 14 years

Int. Cl. D7—*03*

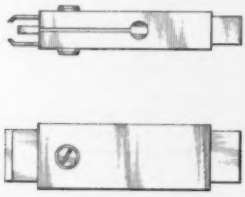
U.S. Cl. D7—137



252,608
CHILD'S BED
Virgil R. Carter, 505 N. Lakeshore Dr., Chicago, Ill. 60611
Filed Jun. 23, 1977, Ser. No. 809,179
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—5

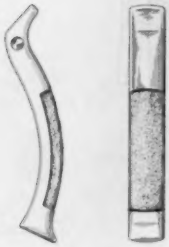


252,609
TOOL FOR HANDLING OF ELECTRICAL COMPONENTS
Olle P. M. Wolkert, Kungsvagen 1, Trangsund, Sweden
Filed Apr. 20, 1977, Ser. No. 789,099
Claims priority, application Sweden, Oct. 21, 1976, 762043
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—51



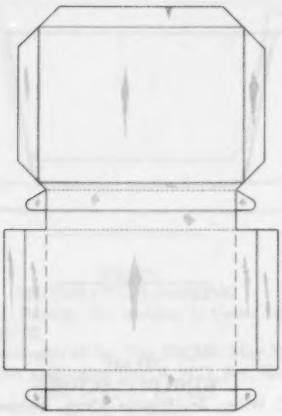
252,610
HANGER OR THE LIKE
Frederick J. Miavitz, 7040 Shaner Rd., Walton Hills, Ohio 44146
Filed May 3, 1977, Ser. No. 793,443
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373

252,611
COVER FOR A PLIERS HANDLE
Carl-Arne Breger, Malmo, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Mar. 18, 1977, Ser. No. 779,240
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—107

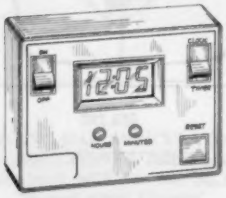


252,612
CONTAINER FOR BLOOD SAMPLES OR THE LIKE
John D. Mull, Burlington, Canada, assignor to Starplex Inc., Mississauga, Canada
Filed Dec. 8, 1976, Ser. No. 748,848
Term of paten: 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

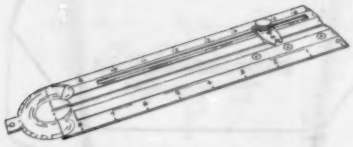
252,613
CARTON BLANK
Joseph R. D'Alessio, Wilbraham, Mass., assignor to Champion International Corporation, Stamford, Conn.
Filed Nov. 4, 1976, Ser. No. 738,653
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—245



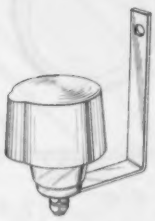
252,614
PORTABLE TIMER
Jeffrey R. Thornberry, 23200 Chagrin Blvd., Beachwood, Ohio 44122
Filed Jun. 23, 1977, Ser. No. 809,174
Term of patent 3½ years
Int. Cl. D10—*03*
U.S. Cl. D10—40



252,615
COMBINED PROTRACTOR, TRIANGLE, COMPASS AND BEAM COMPASS
Gilbert T. Lopez, Boulder, Colo.
Filed Mar. 21, 1977, Ser. No. 779,943
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—62

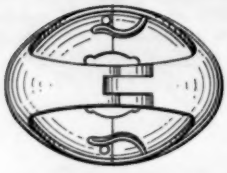


252,616
LIGHTNING ARRESTER
Takeshi Hosokawa, Kawanishi; Hiroshi Oda, Hirakata, and Noboru Yoshida, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 12, 1977, Ser. No. 841,633
Claims priority, application Japan, Apr. 20, 1977, 52-15043
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—105



252,617
IRRIGATION SIGNAL
Edward W. McCloskey, 439-½ Riverside Dr., Burbank, Calif. 91506
Filed Oct. 25, 1977, Ser. No. 845,147
Term of patent 7 years
Int. Cl. D10—*06*
U.S. Cl. D10—114

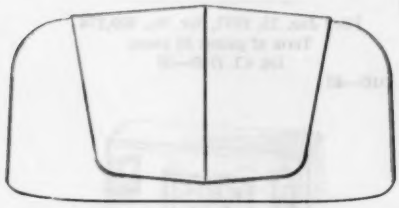
252,618
RING JACKET
Josef J. Barr, 293 S. County Rd., Palm Beach, Fla. 33480
Filed Jan. 26, 1978, Ser. No. 872,740
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86



252,619
WIND DEFLECTOR
Nathaniel C. Wiley, Jr., Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.
Filed Sep. 26, 1977, Ser. No. 836,481
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

252,620
WIND DEFLECTOR
Nathaniel C. Wiley, Jr., Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.
Filed Nov. 14, 1977, Ser. No. 851,524
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

252,621
WIND DEFLECTOR
Nathaniel C. Wiley, Jr., Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.
Filed Nov. 18, 1977, Ser. No. 852,737
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



252,622
WIND DEFLECTOR
Nathaniel C. Wiley, Jr., Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.
Filed Nov. 18, 1977, Ser. No. 852,738
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

252,623

WIND DEFLECTOR

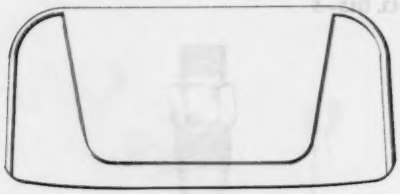
Nathaniel C. Wiley, Jr., Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.

Filed Nov. 18, 1977, Ser. No. 852,957

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—181



252,624

MOTOR-CYCLE FAIRING

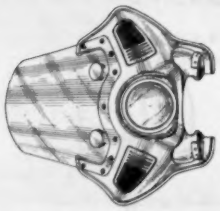
Craig W. Vetter, Rantoul, Ill., assignor to Vetter Fairing Company, Rantoul, Ill.

Continuation-in-part of Ser. No. 802,240, May 31, 1977, abandoned. This application Nov. 4, 1977, Ser. No. 848,776

Term of patent 14 years

Int. Cl. D12—*11*

U.S. Cl. D12—182



252,625

ROWING OAR ARTICULATOR

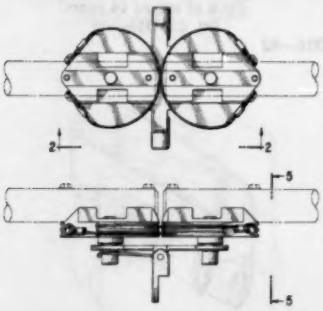
H. Warren White, 1104 S. Bayfront, Balboa Island, Calif. 92662

Filed May 2, 1977, Ser. No. 793,107

Term of patent 14 years

Int. Cl. D12—*99*

U.S. Cl. D12—215



252,626

CURRENT INTERFACE BREAKOUT PANEL

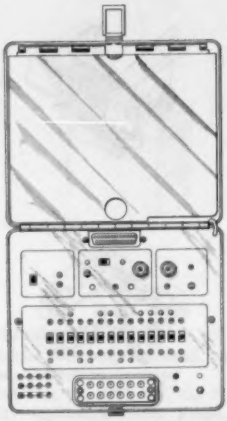
Renato A. D'Antonio, North Attleboro, Mass., assignor to International Data Sciences, Inc., Lincoln, R.I.

Filed May 23, 1977, Ser. No. 799,753

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—12



252,627

REEL FOR MAGNETIC RECORDING TAPE

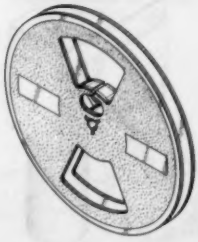
Stephen G. Belgin, Campbell, and Gary E. Hart, Los Gatos, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed May 4, 1977, Ser. No. 793,798

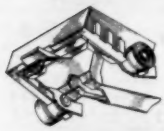
Term of patent 14 years

Int. Cl. D14—*99*

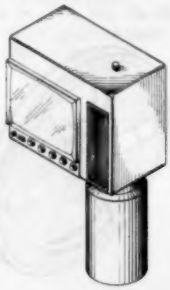
U.S. Cl. D14—11



252,628
PHONOGRAPH STYLUS
James Wellwood, Elmhurst, and Robert L. Deschamps, Wheaton, both of Ill., assignors to Shure Brothers Incorporated, Ill.
Filed Oct. 5, 1977, Ser. No. 839,786
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—29



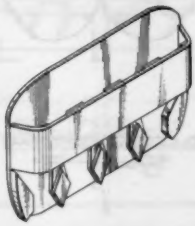
252,629
CLOSED CIRCUIT VIDEO DISPLAY SYSTEM OR SIMILAR ARTICLE
James D. Evans, Jr., Rte. 2, Box 281, Ponchatoula, La. 70454
Filed Nov. 12, 1976, Ser. No. 741,200
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—79



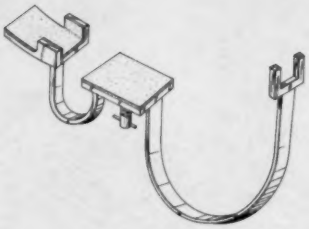
252,630
FUEL INJECTION NOZZLE
Peter Howes, Gerrards Cross, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Jul. 27, 1977, Ser. No. 819,656
Claims priority, application United Kingdom, Feb. 4, 1977, 978763/77
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5

252,631
AUDIO-VISUAL PROJECTOR
Rolf Dieckhoff, Marienstr. 26, Waiblingen, Fed. Rep. of Germany (D-7050)
Filed Mar. 7, 1977, Ser. No. 775,012
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 650/76
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—14

252,632
SPECTACLE HOLDER
Thomas Drayson, C/- W.A.P.E.T. Camp, Barrow Island, Australia (6712)
Filed Sep. 26, 1977, Ser. No. 836,913
Claims priority, application Australia, Aug. 3, 1977, 72488
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—82

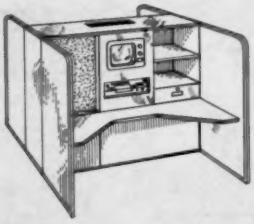


252,633
STAND MOUNT FOR A GUITAR, OR THE LIKE
Floye K. Dreyer, 101 NE. 165th St., North Miami Beach, Fla. 33162
Filed Dec. 2, 1976, Ser. No. 746,931
Term of patent 14 years
Int. Cl. D17—*99, 03;* D6—*06, 99*
U.S. Cl. D17—20



252,634
BARREL TIP ASSEMBLY FOR A BALL POINT PEN
Robert J. Fanella; Elmer D. Thompson, both of Janesville, and Martin E. Wacha, Beloit, all of Wis., assignors to The Parker Pen Company, Janesville, Wis.
Filed Dec. 5, 1977, Ser. No. 857,870
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—54

252,635
PORTABLE LEARNING UNIT
Eugene Richgels, West St. Paul, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Apr. 27, 1977, Ser. No. 791,459
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D19—60



252,636
GAME CABINET
David M. Cook, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.
Filed Jul. 11, 1977, Ser. No. 814,779
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—13

252,637
TOY GYROSCOPE, OR SIMILAR ARTICLE
Thomas B. Mackie, Kirkcaldy, Scotland, assignor to Thomas Salter Limited, Glenrothes, Scotland
Filed Mar. 10, 1977, Ser. No. 776,125
Claims priority, application United Kingdom, Feb. 11, 1976, 977.785
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—96

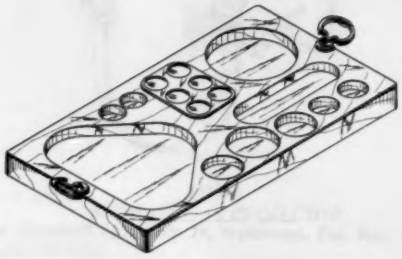
252,638
TENT
William Steinhardt, 10 Seneca Pl., Jericho, N.Y. 11753, and Kerry Nickerson, 210 Abington Dr., Atlanta, Ga. 30328
Filed Jan. 24, 1977, Ser. No. 761,998
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

252,639
HANDLE FOR FISHING ROD ASSEMBLY
Ryuichi Ohmura, No. 19-3, Minami-cho, Shizuoka-shi, Shizuoka-ken, Japan
Filed Aug. 24, 1977, Ser. No. 827,386
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

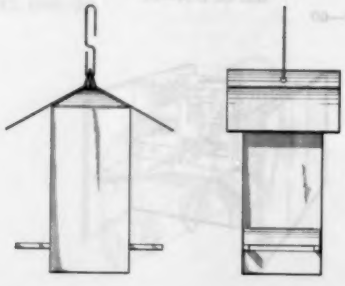
252,640
AIR FILTER
Bill Nederman, Halalid 3, S-252 33 Helsingborg, Sweden
Filed Sep. 10, 1976, Ser. No. 722,212
Claims priority, application Sweden, Mar. 12, 1976, 760564
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149

252,641
HEAT RECIRCULATOR
Ralph M. LaZar, Skokie, Ill., assignor to Broan Manufacturing Co., Inc., Hartford, Wis.
Filed Feb. 9, 1977, Ser. No. 766,914
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

252,642
FACIAL TRAY
Elizabeth G. Davidson, 1046 Calle Mesita, Bonita, Calif. 92002
Filed Nov. 23, 1977, Ser. No. 854,465
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—9

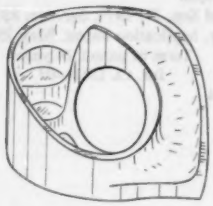


252,643
BIRD FEEDER
Meillyn Kreusser, 7750 W. 88th St., Indianapolis, Ind. 46278
Filed Oct. 30, 1978, Ser. No. 955,801
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15

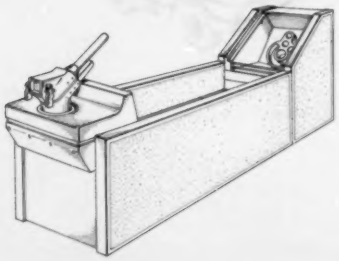


252,644
MARIONETTE TOY
Steve Wagman, 67 Indian Road Cres., Toronto, Ontario, Canada
Filed May 4, 1977, Ser. No. 793,792
Claims priority, application Canada, Jan. 28, 1977, 28-01-77-1
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—152

252,645
COMBINED SLIDE AND TUNNEL TOY
John A. Gale, 185 W. Lake St., Excelsior, Minn. 55331
Filed May 31, 1977, Ser. No. 802,244
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—244



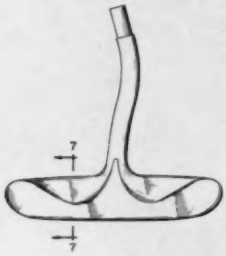
252,646
GUN AMUSEMENT CABINET
Vernon R. Natwick, Saratoga, Calif., assignor to Ramtek Corporation, Sunnyvale, Calif.
Filed Jul. 29, 1977, Ser. No. 820,142
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—5



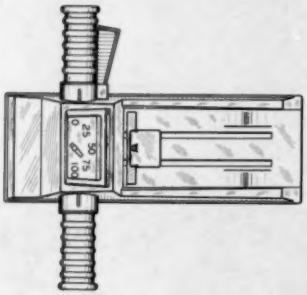
252,647
BOWLING GAME BOARD
Henry C. Dehmer, 13361 Greentree Ave., Garden Grove, Calif. 92640
Filed Oct. 20, 1977, Ser. No. 844,071
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27

252,648
BAT IN WHICH A GAME PLAYER'S HAND IS INSERTED
Nils O. S. Malm, Lupinvagen 12, and Carl G. Larsson, Lupinvagen 22, both of S-162 35 Vallingby, Sweden
Filed Nov. 9, 1977, Ser. No. 850,054
Claims priority, application Sweden, May 26, 1977, 77-1200
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—212

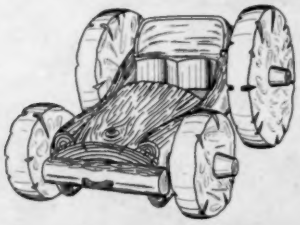
252,649
GOLF PUTTER HEAD
Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254
Filed Nov. 25, 1977, Ser. No. 854,990
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217



252,650
TOY RAMP
Michael C. Cartabiano, Mamaroneck, N.Y., assignor to Child Guidance Playthings, Inc.
Filed Sep. 2, 1976, Ser. No. 720,223
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—91



252,651
TOY CAR
Sidney Tepper, 25 Edgewood Ter., Millburn, N.J. 07041
Filed Dec. 9, 1976, Ser. No. 749,151
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—73



252,652
TOY VEHICLE WITH REMOVABLE HANDLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Taira Hanashima, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 30, 1977, Ser. No. 829,108
Claims priority, application Japan, May 18, 1977, 52-18980
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74

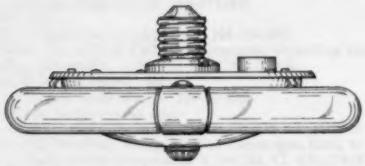
252,653
TOY VEHICLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Kazuo Nagata, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 27, 1977, Ser. No. 837,325
Claims priority, application Japan, May 25, 1977, 52-20130
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74

252,654

FLUORESCENT FIXTURE

Udo Fritsch, 18 Bridge St., Salem, N.H. 03079

Filed May 11, 1977, Ser. No. 796,044
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 A

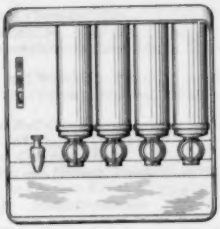


252,655

DISPENSER FOR DRIED FOODS OR THE LIKE

Denis V. Dibling, Avenue Brugmann 197, 1180 Brussels, Belgium

Filed Dec. 29, 1976, Ser. No. 755,349
Claims priority, application Belgium, Jun. 29, 1976, 00641
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—92



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF AUGUST, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Corporation: *See*—
Buckman, John B.; and Lykes, Robert E., 4,164,674, Cl. 310-90.000.

A/S Apothekernes Laboratorium for Specialpraeparater: *See*—
Oystese, Brigt, 4,164,572, Cl. 424-177.000.

A-T-O, Inc.: *See*—
Schnier, Edward A., 4,164,281, Cl. 198-394.000.

Aagaard, Einar A., to U.S. Philips Corporation. Signalling system for overvoltage protectors. 4,164,632, Cl. 179-175.30R.

AB Vargarda Armaturfabrik: *See*—
Riis, Voldemar, 4,164,321, Cl. 236-12.00R.

ACF Industries, Incorporated: *See*—
Sato, Masaaki; and Kosaka, Shinya, 4,164,675, Cl. 310-268.000.

Achini, Roland; Oppolzer, Wolfgang; and Pfenninger, Emil, to Sandoz Ltd. Benz[f]isoindoline compounds. 4,164,583, Cl. 424-274.000.

Adams, James W.; and Reinke, Orville H., to American Can Company. Premoistened flushable wiper. 4,164,595, Cl. 427-341.000.

Addor, Roger W.: *See*—
Kamesaran, Venkataraman; and Addor, Roger W., 4,164,415, Cl. 71-114.000.

AGFA-Gavaert, A.G.: *See*—
Viehrig, Wolfgang; and Sperber, Werner, 4,164,371, Cl. 354-312.000.

Ahlgren, David W.; Hassell, David A.; and Zimmer, Elvis S., to Paulucci, Jeno F. Method of heating food article. 4,164,591, Cl. 426-523.000.

Ahmed, Adel A. A., to RCA Corporation. Television kinescope protection circuit. 4,164,687, Cl. 315-384.000.

Air Products and Chemicals, Inc.: *See*—
Daniels, Wiley E.; and Lenney, William E., 4,164,489, Cl. 260-29.60R.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor switch device. 4,164,667, Cl. 307-253.000.

Akamatsu, Yoshimi: *See*—
Fujita, Yukio; Iwanami, Teruo; and Akamatsu, Yoshimi, 4,164,529, Cl. 264-565.000.

Akasaka, Shigeo: *See*—
Kimura, Shuji; Akasaka, Shigeo; Daitoku, Koichi; Hasegawa, Hiroshi; and Kimura, Makoto, 4,164,370, Cl. 354-243.000.

Akita, Hiroshi. Grinding wheel. 4,164,098, Cl. 51-209.00R.

Akita, Sigeyuki; and Kitagawa, Junji, to Nippon Soken, Inc. Rotational position detector utilizing an FET blocking oscillator. 4,164,706, Cl. 324-208.000.

Akzo N.V.: *See*—
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,164,437, Cl. 156-167.000.
Noomen, Arie; and Wolters, Egbert, 4,164,459, Cl. 204-159.180.

Akzona Incorporated: *See*—
Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kessler, Erich, 4,164,603, Cl. 428-398.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Rare earth exchange X zeolites, catalyst employing the same and method for producing the same. 4,164,483, Cl. 252-455.00Z.

Albany International Corp.: *See*—
Renjilian, Armen; Nichols, Donald S.; and Hartigan, Richard J., Jr., 4,164,530, Cl. 264-103.000.

Alco Standard Corporation: *See*—
Cooper, Troy L., 4,164,492, Cl. 260-40.00R.

Allen-Bradley Company: *See*—
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,164,067, Cl. 29-620.000.

Allen, David J., to E. T. Oakes Limited. In-line mixer. 4,164,375, Cl. 366-337.000.

Allied Chemical Corporation: *See*—
Patel, Gordhanbhai N., 4,164,458, Cl. 204-159.170.
Van Peppen, Jan F.; and Fisher, William B., 4,164,515, Cl. 260-586.00P.

Allington, William B., deceased (by Emery; executor, Richard T.); Nelson, James W.; Cordry, Arthur L.; McCullough, Gail A.; and Mitchell, Don E., to Instrumentation Specialties Company. Sample concentrator. 4,164,464, Cl. 204-299.00R.

Amari, Hiroshi: *See*—
Tamai, Yasuo; Fujiyama, Masaaki; and Amari, Hiroshi, 4,164,604, Cl. 428-409.000.

Amerace Corporation: *See*—
Silva, Frank A., 4,164,621, Cl. 174-78.000.

American Air Filter Company, Inc.: *See*—
Kannapell, David H., 4,164,399, Cl. 55-223.000.
Onnen, James H., 4,164,211, Cl. 126-285.00A.
Simko, Alexander P., 4,164,547, Cl. 423-242.000.

American Can Company: *See*—
Adams, James W.; and Reinke, Orville H., 4,164,595, Cl. 427-341.000.
Meyers, George L.; and Gorshe, Thomas M., 4,164,171, Cl. 93-49.00R.

American Cyanamid Company: *See*—
Goodman, Richard M., 4,164,521, Cl. 525-187.000.
Kamesaran, Venkataraman; and Addor, Roger W., 4,164,415, Cl. 71-114.000.
Los, Marinus; and Walworth, Bryant L., 4,164,404, Cl. 71-77.000.
Nandagiri, Arun; Tripathi, Uma; and Hunter, LeRoy, 4,164,562, Cl. 424-47.000.

American National Red Cross: *See*—
Hao, Yu L., 4,164,496, Cl. 260-122.000.

American Sterilizer Company: *See*—
Young, Jack H.; and Halleck, Frank E., 4,164,538, Cl. 422-26.000.

Ames, William A., to Eastman Kodak Company. Terpolymer compositions useful as pressure-sensitive adhesives. 4,164,614, Cl. 526-264.000.

Amey, Arnold, to Tom McGuane Industries, Inc. Fuel pressure regulator assembly. 4,164,237, Cl. 137-510.000.

AMP Incorporated: *See*—
Cobaugh, Robert F.; and Doty, Donald J., 4,164,362, Cl. 339-17.00M.

Amsbury, Clifford R.; and Warren, Eric, to Rolls-Royce Limited. Means for indicating the profile of a workpiece. 4,164,694, Cl. 318-578.000.

AMSTED Industries Incorporated: *See*—
Sandor, Louis; and Wendt, Albert T., 4,164,141, Cl. 73-81.000.

Anami, Takayuki: *See*—
Fukuoka, Kenji; and Anami, Takayuki, 4,164,762, Cl. 358-304.000.

Anchor Hocking Corporation: *See*—
Muller, Jean A.; and Shilling, Ray A., 4,164,287, Cl. 211-134.000.

Anderegg, Max; and Rutimann, Kurt, to Feller AG. Method and apparatus for sheet transport in automatic reading equipment. 4,164,649, Cl. 235-480.000.

Anderson, Marvin H.: *See*—
Kneip, George D., Jr.; Anderson, Marvin H.; and Gang, Robert E., 4,164,777, Cl. 361-331.000.

Anderson, Ralph A., to Bourns, Inc. Ultrasonic amplifier detector. 4,164,143, Cl. 73-194.0VS.

Anderson, Willis H.: *See*—
Sheridan, John J.; Graddy, Willard E.; and Anderson, Willis H., 4,164,633, Cl. 200-4.000.

Anderten, John R.; and Peter, Glen O., to Energy Controls, Inc. Method and apparatus for ventilating an occupied space. 4,164,172, Cl. 98-33.00R.

Anselrode, Lodewijk, to Stork Brabant B.V. Apparatus for printing materials. 4,164,746, Cl. 346-140.00R.

Anthony, Donald R.; Bone, Lee, III; and Price, William G., to Atlantic Richfield Company. Internal protection of well casing. 4,164,257, Cl. 166-113.000.

Apura GmbH: *See*—
Baumann, Manfred; and Besserer, Walter, 4,164,178, Cl. 100-99.000.

Aranguren, William L., to Bell Telephone Laboratories, Incorporated. Multiple microprocessor intercommunication arrangement. 4,164,787, Cl. 364-200.000.

Arato, Laszlo F.: *See*—
Barothy, Janos, 4,164,047, Cl. 4-172.110.

ARBED - Acieries Reunies de Burbach-Eich-Dudelange S.A.: *See*—
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Arbrook, Inc.: *See*—
Dorman, Henry P., 4,164,285, Cl. 206-306.000.

Archifar Laboratori Chimico Farmachologici S.p.A.: *See*—
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, 4,164,499, Cl. 260-239.30P.

Armand, Marcel; and Charquet, Daniel, to Ugine Aciers. Master alloy for the preparation of zirconium alloys. 4,164,420, Cl. 75-175.00R.

Armster, Joachim: *See*—
Schumacher, Wilhelm; Rothbuhr, Lothar; and Armster, Joachim, 4,164,423, Cl. 106-20.000.

Arndt, Friedrich; and Boroschewski, Gerhard, to Schering Aktiengesellschaft. N-methylcarbanilic-[3-(ethoxycarbonylamino)-phenyl]-ester as a cotton herbicide. 4,164,414, Cl. 71-111.000.

Arnold, William L.; and Wilson, Harry M., Jr. Safety cradle for transformer repair. 4,164,345, Cl. 269-69.000.

Aron, Milton, to De Laval Turbine Inc. Self-powered electrical meter for display of a liquid-level or the like measurement. 4,164,145, Cl. 73-293.000.

Aronson, Bernard S.; Herczog, Andrew; and Murphy, James A., to Corning Glass Works. Process of forming a solid tantalum capacitor. 4,164,455, Cl. 204-38.00A.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Miyata, Katsuhiko, 4,164,368, Cl. 354-23.00R.

Urano, Fumio; and Takahashi, Norimichi, 4,164,369, Cl. 354-219.000.
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Nakai, Shiro; Asami, Kazuto; and Matono, Hirokuni, 4,164,232, Cl. 133-8.00R.
Asanomi, Koji; Takemoto, Yasunori; and Kobayashi, Kazuo, to Toyo Kogyo Co., Ltd. Internal combustion engine having a dual induction type intake system. 4,164,205, Cl. 123-117.00R.
Asanomi, Koji: *See*—
Okitsu, Kingo; Asanomi, Koji; Harada, Setsuo; and Takemoto, Yasunori, 4,164,207, Cl. 123-119.00A.
Okitsu, Kingo; Asanomi, Koji; Harada, Setsuo; and Takemoto, Yasunori, 4,164,208, Cl. 123-119.00A.
Ashworth, Billy R., to United States of America, National Aeronautics and Space Administration. Seat cushion to provide realistic acceleration cues to aircraft simulator pilot. 4,164,079, Cl. 35-12.00E.
Atari, Inc.: *See*—
Stubben, David R., 4,164,759, Cl. 358-180.000.
Atlantic Richfield Company: *See*—
Anthony, Donald R.; Bone, Lee, III; and Price, William G., 4,164,257, Cl. 166-113.000.
Auerbach, Albert A., to Medalert Corporation. Rate failure indicator. 4,164,227, Cl. 128-419.0PT.
Austin, Lloyd M.: *See*—
Gulledge, Charles P.; Austin, Lloyd M.; and Stephens, James B., 4,164,701, Cl. 324-51.000.
Azcarate de Morgan, Esther; Morgan-Landa, David; and Becerra-Lopez, Jose L. Rectilinear sliding panel display for successively exposing different printed pictures. 4,164,086, Cl. 40-476.000.
Baker, Exzelon F. Die-resembling game cube. 4,164,351, Cl. 273-144.00B.
Baker, Jerry L.: *See*—
Clay, Edward L.; and Baker, Jerry L., 4,164,526, Cl. 264-45.300.
Baker, T. R.: *See*—
Clay, Edward L.; and Baker, Jerry L., 4,164,526, Cl. 264-45.300.
Bakul, Valentin N.; Vovchanovsky, Ivan F.; and Tsypin, Nekhemian V. Method of making superhard articles. 4,164,527, Cl. 264-60.000.
Balaban, Alvin R.: *See*—
Steckler, Steven A.; and Balaban, Alvin R., 4,164,711, Cl. 325-464.000.
Baldwin, Roger A.; Davis, Robert E.; Leonard, Robert E.; and Rhodes, Donald E., to Kerr-McGee Corporation. Method of improving yield in a coal liquefaction product deashing process. 4,164,466, Cl. 208-177.000.
Barger, Frank L.: *See*—
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,164,450, Cl. 196-14.520.
Barmag Barmer Maschinenfabrik AG: *See*—
Hertell, Siegfried, 4,164,384, Cl. 418-47.000.
Barna, Ivan J. Decorative ring-like structure and method of making same. 4,164,058, Cl. 24-1.000.
Barnard & Leas Mfg. Co.: *See*—
Dorwin, John J., 4,164,297, Cl. 414-481.000.
Barnert, Heiko; Perec, Mieczyslaw; and Struck, Bernd D., to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of recovering hydrogen and oxygen from water. 4,164,457, Cl. 204-129.000.
Barnett, John S.: *See*—
Biricik, Vahram W.; Chun, Kang R.; Gresko, Laurence S.; and Barnett, John S., 4,164,677, Cl. 313-35.000.
Barothy, Janos, to Arato, Laszlo F., a part interest. Multipurpose gymnasium. 4,164,047, Cl. 4-172.110.
Barrows, Robert E.: *See*—
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,766, Cl. 360-97.000.
Kaseta, Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,769, Cl. 360-106.000.
Barry, Veryl D.: *See*—
Marnett, Lawrence F.; and Barry, Veryl D., 4,164,593, Cl. 426-653.000.
Bartelmuss, Heinrich. Abrasion-resistant plate. 4,164,442, Cl. 162-352.000.
Bartonitscheck, Norbert: *See*—
Kraemling, Franz; Bartonitscheck, Norbert; Mattes, Gunther; and Nieven, Jakob, 4,164,107, Cl. 52-232.000.
BASF Aktiengesellschaft: *See*—
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, 4,164,511, Cl. 260-465.00E.
Hoene, Richard; Jung, Dietmar; Schenck, Hans-Uwe; and Spoor, Herbert, 4,164,613, Cl. 526-201.000.
Patsch, Manfred; and Hettche, Albert, 4,164,500, Cl. 260-239.900.
BASF Wyandotte Corporation: *See*—
Raczynski, Michael E.; and Streiff, William G., 4,164,300, Cl. 220-94.00R.
Baumann, Manfred; and Besserer, Walter, to Apura GmbH. Container, closable by a lid, for receiving and compressing waste. 4,164,178, Cl. 100-99.000.
Baumgartner, Klaus, to Messer Griesheim GmbH. Process and device for room cooling. 4,164,127, Cl. 62-98.000.
Baumgartner Papiers S.A.: *See*—
Lebet, Jean-Pierre, 4,164,438, Cl. 156-180.000.
Baverstock, John L.: *See*—
Kato, Makoto; Velie, Larry N.; and Baverstock, John L., 4,164,704, Cl. 324-73.0PC.
Baxter Travenol Laboratories, Inc.: *See*—
Boggs, Daniel R., 4,164,318, Cl. 233-26.000.
Bayer Aktiengesellschaft: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,164,575, Cl. 424-216.000.
Kuhnlein, Hans L.; and Muller, Wolfgang-Dieter, 4,164,441, Cl. 159-13.00A.
Baymiller, Judith: *See*—
Sheehan, Brian T.; Baymiller, Judith; and Eltz, Robert W., 4,164,445, Cl. 435-46.000.
Beall, George H.; and Reade, Richard F., to Corning Glass Works. Glasses exhibiting high lithium ion mobility. 4,164,610, Cl. 429-193.000.
Bean, Mervyn L.; and Price, Samuel, to Vickers Limited. Safety apparatus for firing equipment. 4,164,165, Cl. 89-134.000.
Beasley, Donald R., to Norfield Corporation. Apparatus for forming expanded panels. 4,164,389, Cl. 425-406.000.
Beatty, Bobby D.; Daniel, Russell D.; and Humerickhouse, Billy J., to United States of America, Navy. Submarine signal fuze. 4,164,186, Cl. 102-37.800.
Beaucamp, Klaus: *See*—
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; Bernt, Erich; and Gruber, Wolfgang, 4,164,448, Cl. 435-11.000.
Becerra-Lopez, Jose L.: *See*—
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Beckman Instruments, Inc.: *See*—
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Beechamgroup Limited: *See*—
Bywater, Robert J., 4,164,568, Cl. 424-153.000.
Begnaud, John D.: *See*—
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Wadleigh, Edward R., 4,164,367, Cl. 353-26.00R.
Bell Telephone Laboratories, Incorporated: *See*—
Aranguren, William L., 4,164,787, Cl. 364-200.000.
Biazzo, Martin R.; and Dick, George W., 4,164,678, Cl. 313-220.000.
Brolin, Stephen J.; Lisco, Richard J.; and Manfred, Mark T., 4,164,713, Cl. 328-111.000.
Dague, George I.; and Murphy, Lawrence E., 4,164,716, Cl. 330-252.000.
Michaelis, Paul C., 4,164,790, Cl. 365-2.000.
Belostotskaya, Nelli S.: *See*—
Sheinin, Evgeny I.; Belostotskaya, Nelli S.; and Yakovlev, Lev N., 4,164,198, Cl. 118-315.000.
Bendix Corporation, The: *See*—
Gollomp, Bernard P., 4,164,786, Cl. 364-200.000.
Toelle, Alvin D., 4,164,206, Cl. 123-119.00A.
Benedek, George B.: *See*—
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Benkoe, Elisabeth, executrix: *See*—
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; and Dantzer, Elonne, 4,164,092, Cl. 46-123.000.
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Goldfarb, Adolph E.; Benkoe, Erwin, deceased; and Dantzer, Elonne, 4,164,092, Cl. 46-123.000.
Benson, Victor N., to Sundstrand Corporation. Governor for controlling hydraulic transmission. 4,164,235, Cl. 137-52.000.
Bentley, Donald J.; and Raible, Donald A., to Bentley Laboratories, Inc. Atraumatic blood access device valve. 4,164,221, Cl. 128-214.00R.
Bentley, James G., to Teepak, Inc. Method and apparatus for the manufacture of fibrous casing. 4,164,536, Cl. 264-173.000.
Bentley Laboratories, Inc.: *See*—
Bentley, Donald J.; and Raible, Donald A., 4,164,221, Cl. 128-214.00R.
Raible, Donald A., 4,164,468, Cl. 210-23.00R.
Berger, Hans, to Centra-Burkle GmbH & Co. Manually programmable storage device. 4,164,665, Cl. 307-141.000.
Berger, Harald; Quentin, Karl-Ernst; and Weil, Ludwig, to Hoechst Aktiengesellschaft. Absorbent for water purification and process for preparing same. 4,164,482, Cl. 252-428.000.
Bergstrom, Gunnar, to Linden-Alimak AB. System for indicating stop levels for an elevator. 4,164,271, Cl. 187-32.000.
Berke, Herbert, to United States of America, Navy. Remote target hit monitoring system. 4,164,081, Cl. 35-25.000.
Bernecker, Gunther, to G.M.C. Research, Inc. Device for supplying fuel to an internal combustion engine. 4,164,525, Cl. 261-41.00B.
Bernt, Erich: *See*—
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; Bernt, Erich; and Gruber, Wolfgang, 4,164,448, Cl. 435-11.000.
Bertus, Brent J., to Phillips Petroleum Company. Oxidative dehydrogenation processes. 4,164,519, Cl. 585-622.000.
Besserer, Walter: *See*—
Baumann, Manfred; and Besserer, Walter, 4,164,178, Cl. 100-99.000.
Bessho, Sadao: *See*—
Ikushima, Heizi; Nakano, Hiroto; Igusa, Kazuo; and Bessho, Sadao, 4,164,569, Cl. 424-174.000.
Biazzo, Martin R.; and Dick, George W., to Bell Telephone Laboratories, Incorporated. Planar AC plasma panel. 4,164,678, Cl. 313-220.000.

Bikbau, Marsel Y.: *See—*
Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Bun, Isaak M.; and Kevvai, Arnold A., 4,164,425, Cl. 106-89.000.

Binet, Raymond; Chielens, Alain; and Lebegue, Maurice, to Fives-Cail Babcock. Heat exchanger. 4,164,255, Cl. 165-82.000.

Bird, Forrest M., to Minnesota Mining and Manufacturing Company. Ventilator. 4,164,219, Cl. 128-145.800.

Biricik, Vahram W.; Chun, Kang R.; Gresko, Laurence S.; and Barnett, John S., to Northrop Corporation. Anode assembly for high power electron beam laser. 4,164,677, Cl. 313-35.000.

Blackburn, James C.; and Bromborsky, Alan, to United States of America, Army. Means for reducing nuclear radiation-induced fluorescence noise in fiber-optics communications systems. 4,164,650, Cl. 250-199.000.

Blanke, John D., to Beckman Instruments, Inc. Method for setting side to side carburetor balance. 4,164,142, Cl. 73-118.000.

Blatner, Philip J.: *See—*
Muller, Thomas P.; and Blatner, Philip J., 4,164,780, Cl. 362-64.000.

Blau KG Fabrik fur Kraftfahrzeugteile: *See—*
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Blazey, Richard N., to Eastman Kodak Company. Acoustooptic modulation and deflection. 4,164,717, Cl. 332-7.510.

Blodgett, Stewart B., to Mira-Pak, Inc. Method and apparatus for controlling the average weights of commodities in package form. 4,164,260, Cl. 177-1.000.

Blom, Hubert P., to General Motors Corporation. Seat belt retractor with pivoted locking mechanism. 4,164,337, Cl. 242-107.40A.

Blumbergs, John H.: *See—*
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Blytas, George C.; and Deal, Carl H., to Shell Oil Company. Process for separation of salt from heavy ends wastes of glycerine manufacture. 4,164,507, Cl. 260-412.500.

Boehringer Mannheim GmbH: *See—*
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; Bernt, Erich; and Gruber, Wolfgang, 4,164,448, Cl. 435-11.000.

Boeing Company, The: *See—*
Simpson, Robert D., 4,164,340, Cl. 244-186.000.

Bogdanski, Franz, to Sprecher & Schuh AG. Bimetallic thermo-release, especially for protective motor switch. 4,164,724, Cl. 337-86.000.

Boggs, Daniel R., to Baxter Travenol Laboratories, Inc. Centrifugal processing apparatus with reduced-load tubing. 4,164,318, Cl. 233-26.000.

Boggs, Luther M.; and Hudson, James A., Jr., to Western Electric Company, Inc. Methods of and apparatus for detecting openings in cable jackets. 4,164,703, Cl. 324-54.000.

Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., to CarboMedics, Inc. Artificial vascular and patch grafts. 4,164,045, Cl. 3-1.400.

Bolin, Philip C.: *See—*
Cookson, Alan H.; and Bolin, Philip C., 4,164,243, Cl. 138-162.000.

Boling, Norman L., to Owens-Illinois, Inc. Luminescent solar collector structure. 4,164,432, Cl. 136-89.0PC.

Bollen, Romain F., to C. P. Clare International N.V. Mercury-wetted reed contact relay. 4,164,720, Cl. 335-47.000.

Bone, Lee, III: *See—*
Anthony, Donald R.; Bone, Lee, III; and Price, William G., 4,164,257, Cl. 166-113.000.

Bonfils, Serge J. E.; Dubrasquet, Juliette M.; Fromageot, Pierre; Girma, Jean P.; Lewin, Miguel; and Morgat, Jean L., to Commissariat a l'Energie Atomique; and Institut National de la Sante et de la Recherche Medicale. Medicament which antagonizes the action of gastrin and related polypeptides. 4,164,571, Cl. 424-177.000.

Borg-Warner Corporation: *See—*
Newton, Alwin B., 4,164,128, Cl. 62-105.000.
Schober, Michael A., 4,164,454, Cl. 204-28.000.

Borman, Robert F., to PPG Industries, Inc. Water-borne bondable base coat and size coat for three piece, tin-free steel beverage containers. 4,164,587, Cl. 426-131.000.

Boroschewski, Gerhard: *See—*
Arndt, Friedrich; and Boroschewski, Gerhard, 4,164,414, Cl. 71-111.000.

Bosch, Harald: *See—*
Duttine, Walter; Kratz, Helmut; Bosch, Harald; and Steigerwald, Gerhard, 4,164,280, Cl. 198-781.000.

Bouffard, Jean: *See—*
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Bourns, Inc.: *See—*
Anderson, Ralph A., 4,164,143, Cl. 73-194.0VS.

Bourzat, Jean D.; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, to Rhone-Poulenc Industries. Hydroxythiazolidine-2-thiones. 4,164,579, Cl. 424-263.000.

Bouvin, Jacques, to Esso Societe Anonyme Francaise. Burner for liquid fuel. 4,164,390, Cl. 431-75.000.

Boylston, Clifford H.: *See—*
Jackson, Harold P.; and Boylston, Clifford H., 4,164,112, Cl. 56-295.000.

Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., to Allen-Bradley Company. Method of manufacturing electrical resistor element. 4,164,067, Cl. 29-620.000.

Breedis, John F.: *See—*
Fister, Julius C., Jr.; and Breedis, John F., 4,164,434, Cl. 148-2.000.

Brenner, Douglas; and Lundberg, Robert D., to Exxon Research & Engineering Co. Foamable thermoelastic ionomer composition. 4,164,512, Cl. 521-93.000.

Brewer, Stephen J.: *See—*
Fleming, Ian D.; Turner, Michael K.; and Brewer, Stephen J., 4,164,447, Cl. 435-173.000.

Briccetti, Mario F.; and Eplett, Fredrick R., to Carrier Corporation. Time sequenced multiplexing method of recording and translating data. 4,164,763, Cl. 360-32.000.

Brickell, Christopher G.; and Hodson, Derek A., to Fisher & Paykel Limited. Electronic temperature sensors. 4,164,220, Cl. 128-185.000.

Briltz, Raymond P., to Global Pollution Control Co. (1975) Ltd. Auger type screening device for removing sediment and the like from solutions. 4,164,470, Cl. 210-523.000.

Brock, Jack W.: *See—*
Slagel, John E.; and Brock, Jack W., 4,164,540, Cl. 422-158.000.

Brodbeck, Robert M. Combined telephone index and keyboard for dialer. 4,164,630, Cl. 179-90.00B.

Brolin, Stephen J.; Lisco, Richard J.; and Manfred, Mark T., to Bell Telephone Laboratories, Incorporated. Dual mode telephone subscriber loop current detector. 4,164,713, Cl. 328-111.000.

Bromborsky, Alan: *See—*
Blackburn, James C.; and Bromborsky, Alan, 4,164,650, Cl. 250-199.000.

Bronovsky, Grigory A.; Bukchin, Mikhail O.; and Goldfarb, Alexandr I. Method of making rotor blades of radial-axial hydraulic machines. 4,164,061, Cl. 29-156.80B.

Brooks & Perkins, Incorporated: *See—*
Myron, Clayton E., 4,164,338, Cl. 244-118.00R.

Brooks, Robert J.: *See—*
Ellefson, Larry P.; Brooks, Robert J.; Real, Kenneth G.; and Manthey, John A., 4,164,180, Cl. 101-93.340.

Brouse, S. B.; and Wiedel, John, to United States Steel Corporation. Strapping machine with strap stop barrier, pivotable clamp and adjustable shear anvil. 4,164,176, Cl. 100-4.000.

Brown, Jack: *See—*
Herr, John A.; Brown, Jack; Peterson, Wesley R.; and Jaffe, Wolfgang, 4,164,192, Cl. 112-158.00E.

Brown, Timothy R., to Decitek. Track servoing system using signals from tunnel erase heads. 4,164,781, Cl. 360-77.000.

Brubaker, Gaylen R.; and Scholer, Fred R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,164,394, Cl. 8-107.000.

Bruninga, Kenneth J., to L. R. Nelson Corporation. Sprinkler head with improved integral impact arm and anti-backsplash drive spoon. 4,164,324, Cl. 239-230.000.

Buckman, John B.; and Lykes, Robert E., to A. O. Smith Corporation. Electric motor end play control. 4,164,674, Cl. 310-90.000.

Bukchin, Mikhail O.: *See—*
Bronovsky, Grigory A.; Bukchin, Mikhail O.; and Goldfarb, Alexandr I., 4,164,061, Cl. 29-156.80B.

Bun, Isaak M.: *See—*
Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Bun, Isaak M.; and Kevvai, Arnold A., 4,164,425, Cl. 106-89.000.

Bunker Ramo Corporation: *See—*
Gallagher, David A., 4,164,636, Cl. 200-51.00R.

Burkhart, William H., to Smith & Denison. High sensitivity gas leak detection system. 4,164,138, Cl. 73-23.000.

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Gyi, Ko K.; and Ragle, Herbert U., 4,164,767, Cl. 360-98.000.

Burstein, Norman; and Ditzler, Richard C., to Ultra-Heat Corporation. Broilers and electric heaters therefor. 4,164,175, Cl. 99-446.000.

Butler, Louis R. P.; and Human, Hendrik G. C., to South African Inventions Development Corporation, The. Device for generating an atomic cloud. 4,164,654, Cl. 250-426.000.

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C. J. Patterson Company: *See—*
Marnett, Lawrence F.; and Barry, Veryl D., 4,164,593, Cl. 426-653.000.

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Bollen, Romain F., 4,164,720, Cl. 335-47.000.

Caesar, Michael B., to Occidental Research Corporation. Entrainment separator. 4,164,398, Cl. 55-186.000.

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Leder, Frederic; and Cahn, Robert P., 4,164,556, Cl. 423-569.000.

California Institute of Technology: *See—*
Iwasaki, Richard S., 4,164,718, Cl. 333-81.00R.

Canfield, Sheldon A., to Owens-Corning Fiberglas Corporation. Methods and apparatus for rolling material into a package. 4,164,177, Cl. 100-40.000.

Canon Kabushiki Kaisha: *See—*
Toyomura, Sigeru; and Kawanabe, Tsuyoshi, 4,164,789, Cl. 364-710.000.

Capitol Records, Inc.: *See—*
Hunyar, Csaba K., 4,164,075, Cl. 33-174.00Q.

CarboMedics, Inc.: *See—*
Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., 4,164,045, Cl. 3-1.400.

Carborundum Company, The: *See—*
Carpenter, James H.; and Corderman, Donald G., 4,164,104, Cl. 51-432.000.

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Sawyer, Philip N.; and Freeman, Leon D., 4,164,585, Cl. 424-280.000.

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Sprengling, Gerhard R.; and Cargnel, Louis A., 4,164,619, Cl. 174-52.0PE.

Carlow, Charles A., to National Research Development Corporation. Sorting apparatus. 4,164,291, Cl. 414-136.000.
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Jackson, William P.; and Warseck, Michael R., 4,164,594, Cl. 426-662.000.
Carnegie, Alistair L., to Normalair-Garrett (Holdings) Limited. Wall structures such as for use in deep diving apparatus. 4,164,042, Cl. 2-2.10R.
Carney, William V., to Ports Systems Corp. Electrode for telephone protector modules. 4,164,774, Cl. 361-119.000.
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Carr, John B., to Shell Oil Company. Benzoxazine carboxamides. 4,164,576, Cl. 424-248.540.
Carrier Corporation: *See—*
Briccetti, Mario F.; and Eplett, Fredrick R., 4,164,763, Cl. 360-32.000.
Carrigan, Robert J., to Westvaco Corporation. Universal die mounting plate system. 4,164,076, Cl. 33-181.00R.
Carroll, Joseph P.: *See—*
Sterrett, John P.; Carroll, Joseph P.; and Creager, Richard A., 4,164,093, Cl. 47-57.500.
Cassasanta, Salvatore J., to Wiremold Company, The. Plug-in service pole assembly. 4,164,618, Cl. 174-48.000.
Catanese, Carmen A., to RCA Corporation. Image display device with ion feedback control and method of operating the same. 4,164,681, Cl. 313-400.000.
Caterpillar Tractor Co.: *See—*
Muller, Thomas P.; and Blatner, Philip J., 4,164,780, Cl. 362-64.000.
Cavanagh, Eric J., to Lucas Industries Limited. Fuel pump injector. 4,164,203, Cl. 123-32.0JV.
Cazaux, Pierre: *See—*
Hagenbach, Germain; and Cazaux, Pierre, 4,164,490, Cl. 260-33.6UA.
Cenko, John; and Pechauer, Thomas C., to General Motors Corporation. Process for making bearing locking collar. 4,164,063, Cl. 29-420.500.
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Berger, Hans, 4,164,665, Cl. 307-141.000.
Central Glass Company, Limited: *See—*
Ogino, Kiyoshi, 4,164,534, Cl. 264-117.000.
Central Soya Company, Inc.: *See—*
Kadane, Victor V.; Meyer, Edwin W.; and Whitney, Robert W., 4,164,589, Cl. 426-281.000.
Century Mfg. Co.: *See—*
Smith, Leonard S., 4,164,723, Cl. 336-133.000.
Chambers, Robert V.: *See—*
Savage, Donald D.; Chambers, Robert V.; and Mills, Maurice T., 4,164,246, Cl. 144-2.00Z.
Chang, Robert W. H., to Minnesota Mining and Manufacturing Company. Non-greasy compositions. 4,164,563, Cl. 424-83.000.
Charquet, Daniel: *See—*
Armand, Marcel; and Charquet, Daniel, 4,164,420, Cl. 75-175.00R.
Chatterjea, Probir K.: *See—*
Shore, Daniel B.; and Chatterjea, Probir K., 4,164,276, Cl. 192-13.00R.
Chem-X3, Inc.: *See—*
Whitley, Elmer E., 4,164,477, Cl. 252-99.000.
Chen, James L., to E. R. Squibb & Sons, Inc. Ointment and cream bases capable of withstanding elevated temperatures. 4,164,564, Cl. 424-83.000.
Cheng, William J.; and Guthrie, David B., to Petrolite Corporation. $CaCO_3$-containing dispersions. 4,164,472, Cl. 252-18.000.
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Simic, Milutin, 4,164,428, Cl. 106-287.130.
Chielens, Alain: *See—*
Binet, Raymond; Chielens, Alain; and Lebegue, Maurice, 4,164,255, Cl. 165-82.000.
Childs, William V., to Phillips Petroleum Company. Production of dihydroxy alkane. 4,164,616, Cl. 568-858.000.
Christoe, Charles W.; and Owens, Frank J., to United States of America, Army. High pressure apparatus for microwave resonance spectroscopy. 4,164,700, Cl. 324-0.5AH.
Chu, David C., to Hewlett-Packard Company. Double vernier time interval measurement using triggered phase-locked oscillators. 4,164,648, Cl. 235-92.0FQ.
Chugau Seiyaku Kabushiki Kaisha: *See—*
Ikushima, Heizi; Nakano, Hiroto; Igusa, Kazuo; and Bessho, Sadao, 4,164,569, Cl. 424-174.000.
Chun, Kang R.: *See—*
Biricik, Vahram W.; Chun, Kang R.; Gresko, Laurence S.; and Barnett, John S., 4,164,677, Cl. 313-35.000.
Chung, Daniel A., to Goodyear Tire & Rubber Company, The. Polyurethane tire and wheel assembly. 4,164,251, Cl. 152-323.000.
Ciba-Geigy Corporation: *See—*
Ehrenfreund, Josef, 4,164,403, Cl. 71-76.000.
Schmidt, Andreas; Illy, Hugo; Kirchmayr, Rudolf; and Schmitter, Andre, 4,164,611, Cl. 521-89.000.
Cielo, Paolo; and Westwood, William D., to Northern Telecom Limited. Printing by modulation of ink viscosity. 4,164,745, Cl. 346-140.00R.
Cincinnati Milacron Inc.: *See—*
Howard, Walter D.; and McDonald, David I., 4,164,391, Cl. 432-124.000.
CIR-S.p.A-Divisione SASIB: *See—*
Gurioli, Pasquino, 4,164,278, Cl. 198-487.000.
Clark, Donald Y. Grain spreader. 4,164,327, Cl. 239-669.000.
Clark Equipment Company: *See—*
Williamson, William A., 4,164,137, Cl. 73-19.000.
Clavell, Jack: *See—*
Young, John; Clavell, Jack; and Gaskill, George, 4,164,719, Cl. 335-14.000.
Clavin, Edward A., to Midcon Pipeline Equipment Co. Rotary internal pipe bending mandrel. 4,164,135, Cl. 72-466.000.
Clay, Edward L.; and Baker, Jerry L., to Baker, T. R.; McCarty, F. Walter, Jr.; Jacobs, Norman E.; Ludwikoski, Edward N.; McBurney, C. Alex; Steffen, Lawrence F.; Cooper Corporation, The; H & K Sales Company, Inc.; Phoenix Royalty Associates, Inc.; and Clay, Edward L., by said Edward L. Clay and Jerry Lee Baker. Natural sandwich of filled polyurethane foam. 4,164,526, Cl. 264-45.300.
Clay, Edward L.: *See—*
Clay, Edward L.; and Baker, Jerry L. (said Edward L. Clay and Jerry Lee Baker assors. to), 4,164,526, Cl. 264-45.300.
Clear Day, Inc.: *See—*
Jones, Paul; and Scheffer, John H., 4,164,268, Cl. 182-150.000.
Clough, David; and Ruder, Gary C. F. Stabilized aqueous catecholamine solutions. 4,164,570, Cl. 424-175.000.
Cobaugh, Robert F.; and Doty, Donald J., to AMP Incorporated. Modular card cage with multiple power bus bar means. 4,164,362, Cl. 339-17.00M.
Coetzer, Johan, to South African Inventions Development Corporation, The. Cathode, and a cell incorporating such a cathode. 4,164,608, Cl. 429-50.000.
Cohen, Richard J.: *See—*
von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., 4,164,558, Cl. 424-12.000.
Collin, Lars; and Landalv, Henrik. Exhaust gas muffler. 4,164,266, Cl. 181-250.000.
Collins, Johnny, to Zenith Radio Corporation. Continuous counting system. 4,164,712, Cl. 328-48.000.
Combustion Engineering, Inc.: *See—*
Gibbons, John F.; and Hellens, Robert L., 4,164,443, Cl. 176-50.000.
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Bonfils, Serge J. E.; Dubrasquet, Juliette M.; Fromageot, Pierre; Girma, Jean P.; Lewin, Miguel; and Morgat, Jean L., 4,164,571, Cl. 424-177.000.
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Jacquelin, Jean, 4,164,453, Cl. 204-10.000.
Compagnie Industrielle Des Telecommunications Cit-Alcatel: *See—*
Ollivier, Yves; and Jacob, Michel, 4,164,629, Cl. 179-15.0BS.
Conachey, Eileen. Combination infant and child seat. 4,164,357, Cl. 297-250.000.
Constant, James N. Synthetic aperture using image scanner. 4,164,740, Cl. 343-5.0CM.
Continental Group, Inc., The: *See—*
Flajnik, Louis, 4,164,283, Cl. 198-840.000.
Harned, Frederick G., 4,164,312, Cl. 229-15.000.
Roberson, Carl, 4,164,304, Cl. 220-465.000.
Continental Oil Company: *See—*
Fair, Delbert W., 4,164,264, Cl. 181-119.000.
Kulik, Metro D., 4,164,554, Cl. 423-567.00A.
Cookson, Alan H.; and Bolin, Philip C., to Electric Power Research Institute, Inc. Welded joint in segmented sheath for compressed gas insulated transmission lines. 4,164,243, Cl. 138-162.000.
Cooley, Denton A. Valve prosthesis. 4,164,046, Cl. 3-1.500.
Coonrod, William C., to Fibergate Corporation. Apparatus for fabricating continuous fiber reinforced plastic grating articles. 4,164,439, Cl. 156-441.000.
Cooper Corporation, The: *See—*
Clay, Edward L.; and Baker, Jerry L., 4,164,526, Cl. 264-45.300.
Cooper, Glenn D.; Katchman, Arthur; and Shank, Charles P., to General Electric Company. Polyphenylene ether resin compositions containing polypentenamer. 4,164,493, Cl. 260-42.180.
Cooper, Troy L., to Alco Standard Corporation. Novel catalyst for curing polyester resins and method for determining the degree of cure in polyester and epoxy resin systems. 4,164,492, Cl. 260-40.00R.
Corderman, Donald G.: *See—*
Carpenter, James H.; and Corderman, Donald G., 4,164,104, Cl. 51-432.000.
Cordry, Arthur L.: *See—*
Allington, William B., deceased; Nelson, James W.; Cordry, Arthur L.; McCullough, Gail A.; and Mitchell, Don E., 4,164,464, Cl. 204-299.00R.
Cornell Research Foundation, Inc.: *See—*
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,164,559, Cl. 424-14.000.
Corning Glass Works: *See—*
Aronson, Bernard S.; Herczog, Andrew; and Murphy, James A., 4,164,455, Cl. 204-38.00A.
Beall, George H.; and Reade, Richard F., 4,164,610, Cl. 429-193.000.
Costantini, Michel; and Jouffret, Michel, to Rhone-Poulenc Industries. Preparation of 4-hydroxy-2,4,6-trimethyl-cyclohexa-2,5-diene-1-one. 4,164,516, Cl. 260-586.00P.
Costello, Edward C.: *See—*
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Coupland, Keith; and Smith, Clinton R., to Exxon Research & Engineering Co. Organo molybdenum friction reducing antiwear additives. 4,164,473, Cl. 252-32.70E.

Courtesy Interstate Corporation: *See—*
Remsnyder, Duane C.; and Haynes, Clarence C., 4,164,644, Cl. 219-433.000.

Creager, Richard A.: *See—*
Sterrett, John P.; Carroll, Joseph P.; and Creager, Richard A., 4,164,093, Cl. 47-57.500.

Crockett, Charles. Display device. 4,164,084, Cl. 40-19.000.

Crownover, Frederick S. Automobile ornament. 4,164,087, Cl. 40-492.000.

Cushing, Brian M., to Solartron Electronic Group Limited, The. Deflection amplifier. 4,164,688, Cl. 315-389.000.

Cyphelly, Ivan J. Device for low-loss variation of flow from a positive displacement pump by periodic interruption of the flow. 4,164,240, Cl. 137-887.000.

Dague, George I.; and Murphy, Lawrence E., to Bell Telephone Laboratories, Incorporated. Clock level shifting circuit. 4,164,716, Cl. 330-252.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Oikawa, Masahiro, 4,164,651, Cl. 250-216.000.

Dai, Sheng-Hong A., to Upjohn Company, The. Process for the autoxidation of an isopropylphenyl ester. 4,164,510, Cl. 260-463.000.

Daikin Kogyo Co., Ltd.: *See—*
Matumoto, Syozo; and Okamoto, Mitsuhiro, 4,164,653, Cl. 250-301.000.

Dailey, Richard G., Jr.: *See—*
Kupchan, S. Morris, deceased; Jarvis, Bruce B.; and Dailey, Richard G., Jr., 4,164,584, Cl. 424-279.000.

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Lohrum, Walter; and Tiefenbacher, Eberhard, 4,164,102, Cl. 51-283.00R.

Dainippon Ink & Chemicals, Inc.: *See—*
Kudo, Kin-ichi; Nakamura, Katsuyoshi; and Tazawa, Takatoshi, 4,164,486, Cl. 260-22.0TN.

Daitoku, Koichi: *See—*
Kimura, Shuji; Akasaka, Shigeo; Daitoku, Koichi; Hasegawa, Hiroshi; and Kimura, Makoto, 4,164,370, Cl. 354-243.000.

Damman, Cornelis C., to Holland Mechanics B.V. Apparatus for forming circularly bent articles from a straight metal profiled strip. 4,164,133, Cl. 72-12.000.

Daniel, Russell D.: *See—*
Beatty, Bobby D.; Daniel, Russell D.; and Humerickhouse, Billy J., 4,164,186, Cl. 102-37.800.

Daniels, Wiley E.; and Lenney, William E., to Air Products and Chemicals, Inc. Continuous emulsion polymerization of vinyl acetate and ethylene. 4,164,489, Cl. 260-29.60R.

Danileiko, Jury K.: *See—*
Prokhorov, Alexandr M.; Vinogradov, Alexandr L.; Danileiko, Jury K.; Manenkov, Alexandr A.; Krasnov, Mikhail M.; and Naumidi, Leonid P., 4,164,222, Cl. 128-303.100.

Dantzer, Elonne: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; and Dantzer, Elonne, 4,164,092, Cl. 46-123.000.

Dart Industries Inc.: *See—*
Korenowski, Theodore F., 4,164,456, Cl. 204-52.00R.

Data General Corporation: *See—*
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,766, Cl. 360-97.000.
Kaseta, Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,769, Cl. 360-106.000.

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Yarp, Russel E., 4,164,376, Cl. 400-642.000.

Daugherty, Lenn: *See—*
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,766, Cl. 360-97.000.
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Davis, Robert E.: *See—*
Baldwin, Roger A.; Davis, Robert E.; Leonard, Robert E.; and Rhodes, Donald E., 4,164,466, Cl. 208-177.000.

Davis, Yvette L. Utility bag—beach mat. 4,164,275, Cl. 190-2.000.

De Laval Separator Company, The: *See—*
Nelson, Kurt, 4,164,317, Cl. 233-20.00A.

De Laval Turbine Inc.: *See—*
Aron, Milton, 4,164,145, Cl. 73-293.000.

Deal, Carl H.: *See—*
Blytas, George C.; and Deal, Carl H., 4,164,507, Cl. 260-412.500.

DeCesare, Dominic V. Hot and cold water ratio and volume manual device. 4,164,239, Cl. 137-553.000.

Decitek: *See—*
Brown, Timothy R., 4,164,781, Cl. 360-77.000.

Deckard, John I., to General Motors Corporation. Electromagnetic fuel injector nozzle assembly. 4,164,326, Cl. 239-585.000.

DeLacy, James P., to Gould Inc. Transfer trip circuit with pilot wire monitoring. 4,164,773, Cl. 361-69.000.

Delaporte, Francois X.; Hornung, Robert M.; Lamouroux, Anne-Marie; Lebesnerais, Gerard M.; and Nuez, Jean-Paul J., to International Business Machines Corporation. Method of correcting the voltage coefficient of resistors implanted or diffused in a semiconductor substrate. 4,164,668, Cl. 307-303.000.

DeMag Aktiengesellschaft: *See—*
Duttine, Walter; Kratz, Helmut; Bosch, Harald; and Steigerwald, Gerhard, 4,164,280, Cl. 198-781.000.
Kaufmann, Karl E., 4,164,187, Cl. 104-93.000.

Denes, Oscar L.: *See—*
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,164,067, Cl. 29-620.000.

Denman, Lee R. Offshore pipe laying. 4,164,379, Cl. 405-158.000.

Deragne, Maurice M. Hydraulic clamping apparatus. 4,164,344, Cl. 269-27.000.

Deren, Pincus. Detinning process. 4,164,542, Cl. 423-90.000.

Deschamps, Andre: *See—*
Dezael, Claude; Deschamps, Andre; and Franckowiak, Sigismond, 4,164,543, Cl. 423-189.000.

Design Automotive Distributing: *See—*
Entrup, Robert N., 4,164,358, Cl. 301-36.00R.

Desmond, John W.; and DiFerdinando, Frank. Automobile anti-theft device. 4,164,131, Cl. 70-14.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Feldmann, Martin; Koberstein, Edgar; and Seibold, Klaus, 4,164,557, Cl. 423-600.000.
Laufer, Siegmar, 4,164,509, Cl. 260-448.80R.
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Peart, M. Virginia; DeWitt, David P.; and Kern, Susan T., 4,164,643, Cl. 219-411.000.

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Sinka, Joseph V.; and Villa, Jose L., 4,164,426, Cl. 106-90.000.

Di Bernardo, Pietro. Vacuum-packing method and apparatus. 4,164,111, Cl. 53-434.000.

Dick, George W.: *See—*
Biazzo, Martin R.; and Dick, George W., 4,164,678, Cl. 313-220.000.

Dickey-john Corporation: *See—*
Knepler, John T., 4,164,669, Cl. 310-15.000.

DiFerdinando, Frank: *See—*
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Director-General, Masao Kubota of the Agency of Industrial Science and Technology: *See—*
Tokuda, Masahiro; Tamura, Tadaaki; Kajimoto, Hikokusu; Shimada, Takafumi; Oyamoto, Toshiya; and Ochiai, Setsumi, 4,164,484, Cl. 260-2.300.

Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, to BASF Aktiengesellschaft. Manufacture of N-arylglycinonitriles. 4,164,511, Cl. 260-465.00E.

Ditzler, Richard C.: *See—*
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Dixon, Benjamin: *See—*
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Docutel Corporation: *See—*
McLaughlin, Richard S.; Plaski, Walter; and Swartzendruber, Robert F., 4,164,179, Cl. 101-76.000.

Dogliotti, Amilcare, to P. Ferrero C. S.p.A. Device for heating liquids contained in sealed plastics containers. 4,164,645, Cl. 219-452.000.

Doi, Yoshikazu; Katagiri, Katsuo; and Yoshikawa, Kazuo, to Fuji Photo Optical Co., Ltd. Optical system for color television cameras. 4,164,752, Cl. 358-55.000.

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Marx, Arthur F.; and Doodewaard, Jean, 4,164,446, Cl. 435-63.000.

Doria, Joseph J., to Harris Corporation. Jogging apparatus. 4,164,348, Cl. 271-221.000.

Dorman, Henry P., to Arbrook, Inc. Thermometer sheath. 4,164,285, Cl. 206-306.000.

Dorn, Gordon L.; and Haynes, John R., to J. K. and Susie L. Wadley Research Institute and Blood Bank. Surface separation technique for the detection of microbial pathogens. 4,164,449, Cl. 435-30.000.

Dorwin, John J., to Barnard & Leas Mfg. Co. Folding gooseneck for trailer. 4,164,297, Cl. 414-481.000.

Doty, Donald J.: *See—*
Cobaugh, Robert F.; and Doty, Donald J., 4,164,362, Cl. 339-17.00M.

Double A Products Company: *See—*
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Douglas, Andrew S. M. Air supply systems for operating theatres. 4,164,173, Cl. 98-36.000.

Dow Chemical Company, The: *See—*
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Ma, King W.; Potts, Irvin W.; and Malek, Russell A., 4,164,481, Cl. 252-412.000.
Martin, Patrick H., 4,164,487, Cl. 260-29.2EP.

Dravo Corporation: *See—*
Selmeczi, Joseph G., 4,164,549, Cl. 423-242.000.

Drostholm, Frede H.; Jensen, Harry; and Willadsen, Per. Brick press and associated equipment for making bricks. 4,164,537, Cl. 264-333.000.

Drury, Emma-Jane E., to Eastman Kodak Company. Preservative for hides. 4,164,393, Cl. 8-94.180.

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Dubois, Jean-Claude, to Thomson-Brandt. Method of manufacturing a die designed to duplicate a video frequency signal recording. 4,164,754, Cl. 358-128.000.

Dubrasquet, Juliette M.: *See*—
Bonfils, Serge J. E.; Dubrasquet, Juliette M.; Fromageot, Pierre; Girma, Jean P.; Lewin, Miguel; and Morgat, Jean L., 4,164,571, Cl. 424-177.000.

Dubuit, Jean-Louis. Assembly for feeding objects from a conveyor to a printing station and a printing machine having such a feeding assembly. 4,164,279, Cl. 198-492.000.

Duinker, Simon; and Mulder, Hendrik, to N.V. Optische Industrie "De Oude Delft". Apparatus for tomography. 4,164,657, Cl. 250-445.00T.

Dunn, Michael W.: *See*—
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,164,559, Cl. 424-14.000.

Dunweg, Gustav: *See*—
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Du Pont de Nemours, E. I., and Company: *See*—
Fang, James C., 4,164,463, Cl. 204-296.000.
Gregorovich, Basil V.; and Sanderson, James J., 4,164,488, Cl. 260-29.4UA.
Weigert, Frank J., 4,164,552, Cl. 423-376.000.

Durham Industries, Inc.: *See*—
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Lemonde, Robert; and Dussetour, Bernard, 4,164,152, Cl. 73-665.000.

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DuVall, Bruce W.; Valentine, James W.; and Morey, Kenneth O., to United States of America, Energy. Apparatus and method for monitoring the presence of a conductive media. 4,164,146, Cl. 73-304.00R.

E. L. Hilts & Company: *See*—
Jackson, Charles E., 4,164,269, Cl. 182-229.000.

E. R. Squibb & Sons, Inc.: *See*—
Chen, James L., 4,164,564, Cl. 424-83.000.
Sheehan, Brian T.; Baymiller, Judith; and Eltz, Robert W., 4,164,445, Cl. 435-46.000.
Varma, Ravi K., 4,164,504, Cl. 260-397.100.
Vogt, B. Richard, 4,164,498, Cl. 260-239.30T.
Vogt, B. Richard, 4,164,578, Cl. 424-251.000.
Vogt, B. Richard, 4,164,580, Cl. 424-263.000.

E. T. Oakes Limited: *See*—
Allen, David J., 4,164,375, Cl. 366-337.000.

Eastman Kodak Company: *See*—
Ames, William A., 4,164,614, Cl. 526-264.000.
Blazey, Richard N., 4,164,717, Cl. 332-7.510.
Drury, Emma-Jane E., 4,164,393, Cl. 8-94.180.
Godfrey, Darryl A., 4,164,427, Cl. 106-218.000.
Irick, Gether, Jr.; Ownby, James C.; and Wang, Richard H. S., 4,164,480, Cl. 252-402.000.
Irick, Gether, Jr.; and Wang, Richard H. S., 4,164,494, Cl. 260-45.75R.
McGrain, Thomas M., 4,164,347, Cl. 271-3.100.
Tang, Ching W., 4,164,431, Cl. 136-89.0NB.

Eastman Technology, Inc.: *See*—
Jeffers, Frederick J., 4,164,770, Cl. 360-113.000.

Eaton Corporation: *See*—
Houseman, Henry J.; and Nowicki, Richard W., 4,164,121, Cl. 60-486.000.
Kaiser, Hermann; Nellums, Richard A.; and Olson, Jerry A., 4,164,144, Cl. 73-213.000.
Neuman, Richard F., 4,164,272, Cl. 188-196.00D.

Eaton, Russell K.; and Elenbaas, Ronald A., to Stryker Corporation. Cadaver transport. 4,164,355, Cl. 296-20.000.

Ebert, Edward A. Radiant-hot air heater. 4,164,642, Cl. 219-358.000.

Edgar, Allen C., to Mid-Florida Mining Company. Single use disposable cat litter package. 4,164,314, Cl. 229-33.000.

Efdyn Corporation: *See*—
Schupner, Willard J., 4,164,274, Cl. 188-285.000.

Ehrenfreund, Josef, to Ciba-Geigy Corporation. Method for inhibiting plant growth. 4,164,403, Cl. 71-76.000.

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Ekol Corporation, The: *See*—
Pinckard, Joseph A., 4,164,405, Cl. 71-79.000.

Eleanor & Wilson Greatbatch Foundation: *See*—
Greatbatch, Wilson; Mead, Ralph T.; McLean, Robert L.; Rudolph, Frank W.; and Frenz, Norbert W., 4,164,070, Cl. 29-623.200.

Electric Power Research Institute, Inc.: *See*—
Cookson, Alan H.; and Bolin, Philip C., 4,164,243, Cl. 138-162.000.
Flick, Carl, 4,164,672, Cl. 310-54.000.
Hingorani, Narain G., 4,164,772, Cl. 361-58.000.

Electrolux GmbH: *See*—
Michael, Harald R., 4,164,049, Cl. 4-300.000.

Elenbaas, Ronald A.: *See*—
Eaton, Russell K.; and Elenbaas, Ronald A., 4,164,355, Cl. 296-20.000.

Elf Union: *See*—
Hagenbach, Germain; and Cazaux, Pierre, 4,164,490, Cl. 260-33.6UA.

Ellefson, Larry P.; Brooks, Robert J.; Real, Kenneth G.; and Manthey, John A., to Interface Mechanisms, Inc. Impact printer including hammer bank assembly. 4,164,180, Cl. 101-93.340.

Elliott, Curtis H., Jr., to W. R. Grace & Co. Preparation of zeolite. 4,164,551, Cl. 423-330.000.

Ellison, Manuel. Bracing attachment for wheeled sprinkler system. 4,164,323, Cl. 239-212.000.

Eltra Corporation: *See*—
Jensen, Henry E., 4,164,609, Cl. 429-183.000.

Eltz, Robert W.: *See*—
Sheehan, Brian T.; Baymiller, Judith; and Eltz, Robert W., 4,164,445, Cl. 435-46.000.

Emery; executor, Richard T.: *See*—
Allington, William B., deceased; Nelson, James W.; Cordry, Arthur L.; McCullough, Gail A.; and Mitchell, Don E., 4,164,464, Cl. 204-299.00R.

EMI Limited: *See*—
Marsh, Robin G., 4,164,728, Cl. 340-146.30Q.

Energy Controls, Inc.: *See*—
Anderten, John R.; and Peter, Glen O., 4,164,172, Cl. 98-33.00R.

Enon Valley Industries, Inc.: *See*—
McElroy, Eugene L., 4,164,273, Cl. 188-218.00A.

Entrup, Robert N., to Design Automotive Distributing. Dual wheel conversion assembly for vehicles. 4,164,358, Cl. 301-36.00R.

Eplett, Fredrick R.: *See*—
Briccetti, Mario F.; and Eplett, Fredrick R., 4,164,763, Cl. 360-32.000.

Esso Societe Anonyme Francaise: *See*—
Bouvin, Jacques, 4,164,390, Cl. 431-75.000.

Everest & Jennings, Inc.: *See*—
Rodaway, Keith S., 4,164,354, Cl. 280-42.000.

Everett, Mickey H., to Texas Instruments Incorporated. Method and system for squelching decaying current in motor phases. 4,164,697, Cl. 318-696.000.

Exxon Research & Engineering Co.: *See*—
Brenner, Douglas; and Lundberg, Robert D., 4,164,512, Cl. 521-93.000.
Coupland, Keith; and Smith, Clinton R., 4,164,473, Cl. 252-32.70E.
Gladrow, Elroy M., 4,164,465, Cl. 208-120.000.
Leder, Frederic; and Cahn, Robert P., 4,164,556, Cl. 423-569.000.
Lockett, William, Jr., 4,164,202, Cl. 122-31.00R.
Shropshire, Joseph A.; and Tsien, Hsue C., 4,164,068, Cl. 29-623.100.
Welty, Albert B., Jr., deceased; and Prescott, Doris M., executrix, 4,164,546, Cl. 423-239.000.
Wiggins, Brian H.; and Williams, Harold D., 4,164,136, Cl. 73-17.00R.

Fabel, David A., to Monsanto Company. Abrasion resistant polyvinyl acetal coated article. 4,164,602, Cl. 428-334.000.

Fachbach, Heinz: *See*—
Skatsche, Othmar; Fachbach, Heinz; Thien, Gerhard; List, Hans; and Greier, Josef, 4,164,262, Cl. 180-54.00A.

Fair, Delbert W., to Continental Oil Company. High pressure sealing apparatus. 4,164,264, Cl. 181-119.000.

Falck, Michael J.: *See*—
Steeb, William R.; LeVeau, Robert W.; and Falck, Michael J., 4,164,085, Cl. 40-152.000.

Fang, James C., to Du Pont de Nemours, E. I., and Company. Hydrophilic fluoropolymers. 4,164,463, Cl. 204-296.000.

Farge, Daniel: *See*—
Bourzat, Jean D.; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,164,579, Cl. 424-263.000.

Federal Paper Board Company, Inc.: *See*—
Sutherland, Robert L., 4,164,286, Cl. 206-434.000.

Feldmann, Martin; Koberstein, Edgar; and Seibold, Klaus, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of β-lithium aluminate and needle-shaped product. 4,164,557, Cl. 423-600.000.

Feldstein, Michael: *See*—
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,766, Cl. 360-97.000.
Kaseta, Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,769, Cl. 360-106.000.

Feller AG: *See*—
Anderegg, Max; and Rutimann, Kurt, 4,164,649, Cl. 235-480.000.

Fette, Bruce A., to Motorola, Inc. Pitch detector and method thereof. 4,164,626, Cl. 179-1.0SC.

Fiat Societa' per Azioni: *See*—
Palazzetti, Mario, 4,164,660, Cl. 290-2.000.

Fiber Industries, Inc.: *See*—
Talbot, James R., 4,164,117, Cl. 57-289.000.

Fibergate Corporation: *See*—
Coonrod, William C., 4,164,439, Cl. 156-441.000.

Filtrol Corporation: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,164,483, Cl. 252-455.00Z.

Finch, David A.; and Smillie, Charles M., III, to Time Systems, Inc. Wall switch timer. 4,164,635, Cl. 200-33.00R.

Finkensiep, Friedhelm, to Henkel Kommanditgesellschaft auf Aktien. Extruder with mixing chambers. 4,164,385, Cl. 425-204.000.

Finlayson, Dana C.; Gatzke, Ronald D.; and Stettiner, Robert L., to Hewlett-Packard Company. Electrode switching means for use in a defibrillator. 4,164,215, Cl. 128-696.000.
Finley, Joseph H.; and Blumbergs, John H., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,164,395, Cl. 8-111.000.
Firestone Tire & Rubber Company, The: *See*—
Higbee, Wallace C.; and Rumpf, Robert J., 4,164,336, Cl. 242-107.40A.
Fischer, Artur. Assembly kit for assembling a toy vehicle. 4,164,090, Cl. 46-17.000.
Fisher & Paykel Limited: *See*—
Brickell, Christopher G.; and Hodson, Derek A., 4,164,220, Cl. 128-185.000.
Fisher, William B.: *See*—
Van Peppen, Jan F.; and Fisher, William B., 4,164,515, Cl. 260-586.00P.
Fister, Julius C., Jr.; and Breedis, John F., to Swiss Aluminium Ltd. Aluminum alloy capacitor foil and method of making. 4,164,434, Cl. 148-2.000.
Fives-Cail Babcock: *See*—
Binet, Raymond; Chielens, Alain; and Lebegue, Maurice, 4,164,255, Cl. 165-82.000.
Mercier, Andre, 4,164,429, Cl. 127-15.000.
Robache, Andre, 4,164,052, Cl. 15-3.110.
Fizichesky Institut Imeni P.N. Lebedeva Akademii Nauk SSSU of USSR: *See*—
Prokhorov, Alexandr M.; Vinogradov, Alexandr L.; Danileiko, Jury K.; Manenkov, Alexandr A.; Krasnov, Mikhail M.; and Naumidi, Leonid P., 4,164,222, Cl. 128-303.100.
Flajnik, Louis, to Continental Group, Inc., The. Friction-reducing high speed chain guides. 4,164,283, Cl. 198-840.000.
Fleming, Ian D.; Turner, Michael K.; and Brewer, Stephen J., to Glaxo Laboratories Limited. O-Transcarbamoylase. 4,164,447, Cl. 435-173.000.
Flick, Carl, to Electric Power Research Institute, Inc. Cooling and insulating system for extra high voltage electrical machine with a spiral winding. 4,164,672, Cl. 310-54.000.
Fluck, Rene; and Ruegg, Franz, to SIG Schweizerische Industrie-Gesellschaft. System for charging a plurality of processing machines. 4,164,277, Cl. 198-369.000.
FMC Corporation: *See*—
Brubaker, Gaylen R.; and Scholer, Fred R., 4,164,394, Cl. 8-107.000.
Finley, Joseph H.; and Blumbergs, John H., 4,164,395, Cl. 8-111.000.
Mencacci, Samuel A., 4,164,590, Cl. 426-407.000.
Folkman, Moses J.; and Langer, Robert S., Jr. Systems for the controlled release of macromolecules. 4,164,560, Cl. 424-22.000.
Ford Motor Company: *See*—
Kruzich, Joseph K., 4,164,071, Cl. 29-625.000.
Lambe, John J.; and McCarthy, Shaun L., 4,164,374, Cl. 356-402.000.
Forster, Franz: *See*—
Tragl, Wilfried; and Forster, Franz, 4,164,169, Cl. 91-504.000.
Foster Wheeler Energy Corporation: *See*—
Steiner, Peter, 4,164,555, Cl. 423-569.000.
Franckowiak, Sigismond: *See*—
Dezael, Claude; Deschamps, Andre; and Franckowiak, Sigismond, 4,164,543, Cl. 423-189.000.
Franzen, Gustav, to Palitex Project Company, GmbH. Pneumatically operated yarn threading mechanisms for textile yarn processing machines. 4,164,115, Cl. 57-279.000.
Freeman, Leon D.: *See*—
Sawyer, Philip N.; and Freeman, Leon D., 4,164,585, Cl. 424-280.000.
Freiberg, Robert J.: *See*—
Sziklas, Edward A.; and Freiberg, Robert J., 4,164,366, Cl. 350-299.000.
French, Michael J. Water wave energy conversion device using flexible membranes. 4,164,383, Cl. 417-330.000.
Frenz, Norbert W.: *See*—
Greatbatch, Wilson; Mead, Ralph T.; McLean, Robert L.; Rudolph, Frank W.; and Frenz, Norbert W., 4,164,070, Cl. 29-623.200.
Freude, Paul, to Dia-Nielsen GmbH Zubehor fur die Messtechnik. Disposable printing head for recording measuring instruments, and the like. 4,164,744, Cl. 346-140.00A.
Frey, Paul H.; and Kupcikevicius, Vytautas, to Union Carbide Corporation. Food casing stuffing sizing control method. 4,164,057, Cl. 17-49.000.
Frigeni, Gianfranco. Immersion apparatus carrying detachable and self-contained prospecting and submarine work units. 4,164,195, Cl. 114-322.000.
Fritz, William E.; Graves, Mark L.; and Seitz, Robert F., to Youngstown Steel Door Company, The. Door assemblies for closing rail car end opening. 4,164,189, Cl. 105-378.000.
Fromageot, Pierre: *See*—
Bonfils, Serge J. E.; Dubrasquet, Juliette M.; Fromageot, Pierre; Girma, Jean P.; Lewin, Miguel; and Morgat, Jean L., 4,164,571, Cl. 424-177.000.
Frosien, Jurgen; Lischke, Burkhard; and Oelmann, Andreas, to Siemens Aktiengesellschaft. Charged-particle beam optical apparatus for imaging a mask on a specimen. 4,164,658, Cl. 250-492.00A.
Fuhr, Patti S. Tray for paint and brushes. 4,164,299, Cl. 220-20.000.
Fuji Photo Film Co., Ltd.: *See*—
Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,164,421, Cl. 96-33.000.
Tamai, Yasuo; Fujiyama, Masaaki; and Amari, Hiroshi, 4,164,604, Cl. 428-409.000.
Fuji Photo Optical Co., Ltd.: *See*—
Doi, Yoshikazu; Katagiri, Katsuo; and Yoshikawa, Kazuo, 4,164,752, Cl. 358-55.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,164,497, Cl. 260-239.100.
Fujita, Satoru. Fingerless glove. 4,164,043, Cl. 2-161.00A.
Fujita, Yukio; Iwanami, Teruo; and Akamatsu, Yoshimi, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for preparing tubular film of hydrolyzed ethylene-vinyl acetate copolymer. 4,164,529, Cl. 264-565.000.
Fujitsu Ten Limited: *See*—
Nakamura, Tadashi; Masuda, Mitsuru; and Tanaka, Hiroshi, 4,164,683, Cl. 313-496.000.
Fujiyama, Masaaki: *See*—
Tamai, Yasuo; Fujiyama, Masaaki; and Amari, Hiroshi, 4,164,604, Cl. 428-409.000.
Fukuda, Takeshi: *See*—
Itoh, Kunio; and Fukuda, Takeshi, 4,164,491, Cl. 260-37.0SB.
Fukuoka, Kenji; and Anami, Takayuki, to Olympus Optical Co., Ltd. Facsimile control apparatus. 4,164,762, Cl. 358-304.000.
Fuller, George, to I.S.C. Chemicals Limited. Preparation of fluoronitrobenzene. 4,164,517, Cl. 260-646.000.
Fulton, Garland L.: *See*—
Taylor, David W.; and Fulton, Garland L., 4,164,124, Cl. 60-683.000.
Funcik, Jack F.; and Wright, Steven F., to Molex Incorporated. Crimping and wire lead insertion machine having improved insertion means. 4,164,065, Cl. 29-564.600.
Funk, Gary L., to Phillips Petroleum Company. Pressure responsive fractionation control. 4,164,451, Cl. 203-2.000.
Funk, Gary L.; and Smith, Dexter E., to Phillips Petroleum Company. Pressure responsive fractionation control. 4,164,452, Cl. 203-2.000.
Funk, Norbert J.; and Puschel, Siegfried, to Linde Aktiengesellschaft. Control device for combustion engine. 4,164,120, Cl. 60-431.000.
Furuno, Akihisa: *See*—
Suzuki, Naoyuki; Wada, Yoji; and Furuno, Akihisa, 4,164,612, Cl. 526-62.000.
Furuta, Takuya: *See*—
Kende, Andrew S.; Tsay, Yuh-Geng; and Furuta, Takuya, 4,164,503, Cl. 260-365.000.
G.M.C. Research, Inc.: *See*—
Bernecker, Gunther, 4,164,525, Cl. 261-41.00B.
Galinsky, Alvin M. Composition and method for making a suppository for introducing a hypoglycemic agent into a mammal. 4,164,573, Cl. 424-178.000.
Gallacher, Lawrence V.; and King, Robert G., to King Industries, Inc. Process for producing metal salts of oil-soluble organosulfonic acids. 4,164,474, Cl. 252-33.000.
Gallagher, David A., to Bunker Ramo Corporation. Integral electrical shorting switch and connector assembly. 4,164,636, Cl. 200-51.00R.
Gamble, Bruce B., to General Electric Company. Resistor-containing cryogenic current lead. 4,164,671, Cl. 310-52.000.
Gamble, Bruce B.: *See*—
Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., 4,164,126, Cl. 62-55.000.
Gambling, Kenneth H., to Set 'N' Forget Products Pty. Ltd. Feeding device. 4,164,200, Cl. 119-51.120.
Gang, Robert E.: *See*—
Kneip, George D., Jr.; Anderson, Marvin H.; and Gang, Robert E., 4,164,777, Cl. 361-331.000.
Garner, Alex V.; and Townsend, Graham, to Tannoy Products Limited. Horn loudspeaker with acoustic lens. 4,164,631, Cl. 179-115.50H.
Garrett, Patricia E.: *See*—
Whitesides, George M.; Garrett, Patricia E.; and Siegel, Merrell G., 4,164,444, Cl. 435-92.00N.
Garvey, Daniel C., to Woodward Governor Company. Electromagnetic actuator with torque-compensating poles. 4,164,722, Cl. 335-272.000.
Gas Research Institute: *See*—
Hollowell, George T., 4,164,210, Cl. 126-110.00R.
Gaskill, George: *See*—
Young, John; Clavell, Jack; and Gaskill, George, 4,164,719, Cl. 335-14.000.
Gatzke, Ronald D.: *See*—
Finlayson, Dana C.; Gatzke, Ronald D.; and Stettiner, Robert L., 4,164,215, Cl. 128-696.000.
Gautier, Francisco. Lady's handbag. 4,164,308, Cl. 224-45.00R.
Gehri, Dennis C., to Rockwell International Corporation. Metal recovery process. 4,164,416, Cl. 75-72.000.
General Atomic Company: *See*—
Mysels, Karol J., 4,164,382, Cl. 415-2.000.
General Battery Corporation: *See*—
Di Giacomo, Hector L.; and Sacco, John A., 4,164,310, Cl. 228-58.000.
General Dynamics Corporation: *See*—
Reavill, Joseph A., 4,164,064, Cl. 29-468.000.
General Dynamics Corporation Electronics Division: *See*—
Thiel, Ronald A.; and Maurer, Edward H., 4,164,607, Cl. 428-621.000.

General Electric Company: *See—*
Cooper, Glenn D.; Katchman, Arthur; and Shank, Charles P., 4,164,493, Cl. 260-42.180.
Gamble, Bruce B., 4,164,671, Cl. 310-52.000.
Ham, Donald M., 4,164,647, Cl. 235-91.00R.
Klug, Frederic J.; Pasco, Wayne D.; and Prochazka, Svante, 4,164,424, Cl. 106-38.900.
Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., 4,164,126, Cl. 62-55.000.
Maher, William M., 4,164,670, Cl. 310-50.000.
Nelson, Thomas E., 4,164,197, Cl. 116-227.000.
Reed, Bradley O.; and Nolan, John M., 4,164,155, Cl. 74-687.000.
Reed, Bradley O., 4,164,156, Cl. 74-687.000.
Salem, Robert J., 4,164,735, Cl. 340-384.00E.

General Engineering Company (Radcliffe) Limited, The: *See—*
Jones, Brian, 4,164,396, Cl. 44-1.00D.

General Motors Corporation: *See—*
Blom, Hubert P., 4,164,337, Cl. 242-107.40A.
Cenko, John; and Pechauer, Thomas C., 4,164,063, Cl. 29-420.500.
Deckard, John I., 4,164,326, Cl. 239-585.000.
Kondziola, Joseph D., 4,164,335, Cl. 242-107.40A.
Sheridan, John J.; Graddy, Willard E.; and Anderson, Willis H., 4,164,633, Cl. 200-4.000.

Georg Spiess GmbH: *See—*
Liepert, Rudolf, 4,164,234, Cl. 137-51.000.
Marass, Josef, 4,164,349, Cl. 271-250.000.

George, Warren T. Portable blind. 4,164,089, Cl. 43-1.000.

Gerdes, Theodor, to Blau KG Fabrik fur Kraftfahrzeugteile. Closure cap having locking means. 4,164,302, Cl. 220-210.000.

Gerstner, Dieter, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor arrangement. 4,164,747, Cl. 357-46.000.

Gibbons, John F.; and Hellens, Robert L., to Combustion Engineering, Inc. Hydraulic fuel hold down. 4,164,443, Cl. 176-50.000.

Gibbs, Charles G., to Gulf Oil Corporation. 1-(2,6-Dichlorobenzoyl)-3-(4-trifluoromethyl-2-thiazolyl)urea and use as insecticide. 4,164,581, Cl. 424-270.000.

Gibbs, Dale S., to Dow Chemical Company, The. Vinylidene chloride polymer microgel powders and acrylic fibers containing same. 4,164,522, Cl. 525-305.000.

Gilano, Michael N., to Telaris Telecommunications, Inc. Keyboard switch assembly with multiple isolated electrical engagement regions. 4,164,634, Cl. 200-5.00A.

Gilsabind Company, The: *See—*
Jones, George M., 4,164,139, Cl. 73-38.000.

Girgis, Mikhail M., to PPG Industries, Inc. Glass fiber coating composition for glass fiber filament bundles to produce reinforcing members for elastomeric articles. 4,164,485, Cl. 260-5.000.

Girma, Jean P.: *See—*
Bonfils, Serge J. E.; Dubrasquet, Juliette M.; Fromageot, Pierre; Girma, Jean P.; Lewin, Miguel; and Morgat, Jean L., 4,164,571, Cl. 424-177.000.

Gist Brocades N.V.: *See—*
Marx, Arthur F.; and Doodewaard, Jean, 4,164,446, Cl. 435-63.000.

Gladrow, Elroy M., to Exxon Research & Engineering Co. Hydrocarbon cracking with catalyst containing a CO oxidation promoter in ultra-stable zeolite particles. 4,164,465, Cl. 208-120.000.

Glassman, Aaron, to Pennsylvania Sewing Research Corp. Belt-conveyor ironing machine. 4,164,083, Cl. 38-11.000.

Glaxo Laboratories Limited: *See—*
Fleming, Ian D.; Turner, Michael K.; and Brewer, Stephen J., 4,164,447, Cl. 435-173.000.

Global Pollution Control Co. (1975) Ltd.: *See—*
Briltz, Raymond P., 4,164,470, Cl. 210-523.000.

Glory Kogyo Kabushiki Kaisha: *See—*
Nakai, Shiro; Asami, Kazuto; and Matono, Hirokuni, 4,164,232, Cl. 133-8.00R.

Goddard, Terrence P., to Teledyne McCormick Selph, an operating div. of Teledyne Ind., Inc. Amino-substituted guanidine salts of decahydrodecaboric acid. 4,164,513, Cl. 260-564.00D.

Godfrey, Darryl A., to Eastman Kodak Company. Stabilized hydrocarbon tackifying compositions. 4,164,427, Cl. 106-218.000.

Goldfarb, A. E.: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; and Dantzer, Elonne, 4,164,092, Cl. 46-123.000.

Goldfarb, Adolph E. Electronic quiz apparatus. 4,164,078, Cl. 35-9.00B.

Goldfarb, Adolph E.; Benkoe, Erwin, deceased (by Benkoe, Elisabeth, executrix); and Dantzer, Elonne, to Goldfarb, A. E. Toy milkable animal figure. 4,164,092, Cl. 46-123.000.

Goldfarb, Alexandr I.: *See—*
Bronovsky, Grigory A.; Bukchin, Mikhail O.; and Goldfarb, Alexandr I., 4,164,061, Cl. 29-156.80B.

Gollomp, Bernard P., to Bendix Corporation, The. Apparatus for expanding memory size and direct memory addressing capabilities of digital computer means. 4,164,786, Cl. 364-200.000.

Gooding, David O. Foldable display container. 4,164,316, Cl. 229-41.00R.

Goodman, Richard M., to American Cyanamid Company. Mixtures of polycationic and polyanionic polymers for scale control. 4,164,521, Cl. 525-187.000.

Goodyear Tire & Rubber Company, The: *See—*
Chung, Daniel A., 4,164,251, Cl. 152-323.000.

Gorden, Dale I.: *See—*
Whitney, Eugene C.; and Gorden, Dale I., 4,164,705, Cl. 324-158.0MG.

Gorshe, Thomas M.: *See—*
Meyers, George L.; and Gorshe, Thomas M., 4,164,171, Cl. 93-49.00R.

Gosudarstvenny Nauchno-Issle-Dovatelsky Institut Stroitelnoi Keramiki Niistroikeramika: *See—*
Sheinin, Evgeny I.; Belostotskaya, Nelli S.; and Yakovlev, Lev N., 4,164,198, Cl. 118-315.000.

Gould Inc.: *See—*
DeLacy, James P., 4,164,773, Cl. 361-69.000.
Young, John; Clavell, Jack; and Gaskill, George, 4,164,719, Cl. 335-14.000.

Gouldey, Donald: *See—*
Hilgner, Otto L.; and Gouldey, Donald, 4,164,056, Cl. 17-21.000.

Graddy, Willard E.: *See—*
Sheridan, John J.; Graddy, Willard E.; and Anderson, Willis H., 4,164,633, Cl. 200-4.000.

Graebner, Heinz, to Henry Voyt Machine Co. Inc. Eccentric ball type valve. 4,164,343, Cl. 251-315.000.

Granahan, Edward A.; and Paulson, Carrold H., Jr., to Pneumo Corporation. Tube skin thermocouples and method of making same. 4,164,433, Cl. 136-229.000.

Grant, Alan H. Contact lens tool. 4,164,099, Cl. 51-216.0LP.

Grants, William V. Internal combustion engine cylinder valve assembly. 4,164,209, Cl. 123-188.0AP.

Graves, Mark L.: *See—*
Fritz, William E.; Graves, Mark L.; and Seitz, Robert F., 4,164,189, Cl. 105-378.000.

Greatbatch, Wilson; Mead, Ralph T.; McLean, Robert L.; Rudolph, Frank W.; and Frenz, Norbert W., to Eleanor & Wilson Greatbatch Foundation. Method of making a lithium-bromine cell. 4,164,070, Cl. 29-623.200.

Greenleaf Corporation: *See—*
Peters, Robert W., 4,164,380, Cl. 407-36.000.

Greenwald, Jonas. Apparatus for controlling the length of cigarette to be smoked. 4,164,231, Cl. 131-192.000.

Gregorovich, Basil V.; and Sanderson, James J., to Du Pont de Nemours, E. I., and Company. Aqueous thermosetting acrylic enamel. 4,164,488, Cl. 260-29.4UA.

Greier, Josef: *See—*
Skatsche, Othmar; Fachbach, Heinz; Thien, Gerhard; List, Hans; and Greier, Josef, 4,164,262, Cl. 180-54.00A.

Gresko, Laurence S.: *See—*
Biricik, Vahram W.; Chun, Kang R.; Gresko, Laurence S.; and Barnett, John S., 4,164,677, Cl. 313-35.000.

Griffiths, William C., to Midland-Ross Corporation. Solar energy assisted air-conditioning apparatus and method. 4,164,125, Cl. 62-2.000.

Grimble, Brian J.; and Rouse, Michael R., to Imperial Chemical Industries Limited. Deep-freeze cabinet with transparent closure. 4,164,361, Cl. 312-236.000.

Grise, Frederick G. J. Solid current carrying and heatable member with electric connection. 4,164,646, Cl. 219-541.000.

Gruber, Wolfgang: *See—*
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; Bernt, Erich; and Gruber, Wolfgang, 4,164,448, Cl. 435-11.000.

Grund, Peter: *See—*
Hesse, Jurgen; and Grund, Peter, 4,164,103, Cl. 51-417.000.

Guipaud, Serge, to Societe Anonyme pour L'Equipement Electrique des Vehicules S.E.V. MARCHAL. Simplified method and apparatus for assuring periodic control of the timing of an internal combustion engine. 4,164,204, Cl. 123-117.00R.

Gulf Oil Corporation: *See—*
Gibbs, Charles G., 4,164,581, Cl. 424-270.000.

Gulledge, Charles P.; Austin, Lloyd M.; and Stephens, James B. Portable device for testing electrical wiring circuits and power tools and equipment. 4,164,701, Cl. 324-51.000.

Gullfiber AB: *See—*
Johansson, Jan-Olof; Korpela, Heikki; and Spacek, Karel, 4,164,160, Cl. 83-307.200.

Gundlach, Robert W.; and Perry, David H., deceased (by Province, Joyce Perry, administratrix), to Xerox Corporation. Method and apparatus for developing an electrical image. 4,164,372, Cl. 355-3.0DD.

Gurioli, Pasquino, to CIR-S.p.A-Divisione SASIB. Continuous pusher device for cigarette packing machines. 4,164,278, Cl. 198-487.000.

Gusev, Mikhail G.: *See—*
Timoshenko, Alexandr T.; Nazarenko, Vladimir I.; Krigman, Felix E.; and Gusev, Mikhail G., 4,164,699, Cl. 323-75.00A.

Gustin, Jay W.: *See—*
Young, Thomas A.; and Gustin, Jay W., 4,164,785, Cl. 363-50.000.

Gustison, Robert A., to Kawecki Berylco Industries, Inc. Process for recovery of niobium values for use in preparing niobium alloy products. 4,164,417, Cl. 75-84.000.

Guthrie, David B.: *See—*
Cheng, William J.; and Guthrie, David B., 4,164,472, Cl. 252-18.000.

Gyi, Ko K.; and Ragle, Herbert U., to Burroughs Corporation. Mass storage device. 4,164,767, Cl. 360-98.000.

Gysling, Walter, to National Computer Systems, Inc. Carousel tape system. 4,164,765, Cl. 360-92.000.

H & K Sales Company, Inc.: *See—*
Clay, Edward L.; and Baker, Jerry L., 4,164,526, Cl. 264-45.300.

Haas, Helmut: *See—*
Kausel, Ernst; and Haas, Helmut, 4,164,328, Cl. 241-175.000.

Hada, Shigetaka: *See*—
Kudo, Masayuki; Miura, Nobuo; and Hada, Shigetaka, 4,164,157, Cl. 74-860.000.
Hagenbach, Germain; and Cazaux, Pierre, to Elf Union. Bitumen compositions containing polymers. 4,164,490, Cl. 260-33.6UA.
Haggerty, Dennis A., to Polytop Corporation. Spray type dispensing closure. 4,164,305, Cl. 222-4.000.
Haliewicz, Emil. Logging carriage. 4,164,289, Cl. 212-122.000.
Hallam, Keith J.; and Knippel, Willis H., to Pullman Incorporated. Self steering railway car. 4,164,188, Cl. 105-166.000.
Halleck, Frank E.: *See*—
Young, Jack H.; and Halleck, Frank E., 4,164,538, Cl. 422-26.000.
Hallmark Cards, Incorporated: *See*—
Steeb, William R.; LeVeau, Robert W.; and Falck, Michael J., 4,164,085, Cl. 40-152.000.
Ham, Donald M., to General Electric Company. Unidirectional register having different gear ratios for normal and reverse input drive rotation. 4,164,647, Cl. 235-91.00R.
Hamano, Masaaki: *See*—
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,164,528, Cl. 264-62.000.
Hammann, Ingeborg: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,164,575, Cl. 424-216.000.
Hammen, Philip D.; and Milne, George M., Jr., to Pfizer Inc. 2-Aminomethyleneindanone analgesic agents. 4,164,514, Cl. 260-570.50P.
Hammer, Richard G., to Whirlpool Corporation. One-way clutch for double-acting agitator. 4,164,130, Cl. 68-133.000.
Hanaoka, Seiji, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Printer. 4,164,181, Cl. 101-99.000.
Hannahs, Arnold E.; and Patrick, Michael D., to Midland-Ross Corporation. Strobe lamp series triggering circuit. 4,164,679, Cl. 315-241.00R.
Hanning, Robert. Method of injection-molding and cooling of shaped synthetic-resin bodies. 4,164,523, Cl. 264-28.000.
Hannoschock, Kurt: *See*—
Ries, Karl; Hannoschock, Kurt; and Simoneit, Gunter, 4,164,150, Cl. 73-644.000.
Hansen, Jorgen F., to Nordisk Insulinlaboratorium. Method of recovering immunoglobulin using a polyol and an alkanoic acid. 4,164,495, Cl. 260-112.00B.
Hanson, Cameron; and Dixon, Benjamin. Dipstick wiper. 4,164,054, Cl. 15-210.00B.
Hao, Yu L., to American National Red Cross. Preparation of albumin using PEG and EDTA. 4,164,496, Cl. 260-122.000.
Harada, Setsuo: *See*—
Okitsu, Kingo; Asanomi, Koji; Harada, Setsuo; and Takemoto, Yasunori, 4,164,207, Cl. 123-119.00A.
Okitsu, Kingo; Asanomi, Koji; Harada, Setsuo; and Takemoto, Yasunori, 4,164,208, Cl. 123-119.00A.
Harju-Jeanty, Pontus A., to Kemira Oy. Synergistic fungicidal compositions. 4,164,582, Cl. 424-273.00R.
Harned, Frederick G., to Continental Group, Inc., The. Dual purpose divider. 4,164,312, Cl. 229-15.000.
Harrington, Joseph K.: *See*—
Moore, George G. I.; and Harrington, Joseph K., 4,164,412, Cl. 71-103.000.
Harris Corporation: *See*—
Doria, Joseph J., 4,164,348, Cl. 271-221.000.
Marciniak, John J., 4,164,159, Cl. 83-280.000.
Smiley, Charles F., 4,164,757, Cl. 358-149.000.
Swanson, Hilmer I., 4,164,714, Cl. 330-10.000.
Hartert, Erwin: *See*—
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, 4,164,511, Cl. 260-465.00E.
Hartigan, Richard J., Jr.: *See*—
Renjilian, Armen; Nichols, Donald S.; and Hartigan, Richard J., Jr., 4,164,530, Cl. 264-103.000.
Hartta, Matti O., to Oy. W. Rosenlew AB. Apparatus for assembling a shadow mask and panel of a picture tube of a television receiver. 4,164,060, Cl. 29-25.190.
Hasegawa, Hiroshi: *See*—
Kimura, Shuji; Akasaka, Shigeo; Daitoku, Koichi; Hasegawa, Hiroshi; and Kimura, Makoto, 4,164,370, Cl. 354-243.000.
Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 4,164,663, Cl. 307-115.000.
Hashimoto, Kazuo, to Hashimoto Corporation. Sequential control signal generator. 4,164,663, Cl. 307-115.000.
Hashimoto, Masashi: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,164,497, Cl. 260-239.100.
Hassell, David A.: *See*—
Ahlgren, David W.; Hassell, David A.; and Zimmer, Elvis S., 4,164,591, Cl. 426-523.000.
Hastings, John A. Disposable earlobe piercing device and method for using the same. 4,164,224, Cl. 128-330.000.
Hatch, Burton D.: *See*—
Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., 4,164,126, Cl. 62-55.000.
Hattori, Masao: *See*—
Nishikawa, Masanori; and Hattori, Masao, 4,164,298, Cl. 215-1.00C.
Haubner, Georg: *See*—
Weckenmann, Albert; and Haubner, Georg, 4,164,730, Cl. 340-168.00R.
Haubold, Axel D.: *See*—
Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., 4,164,045, Cl. 3-1.400.
Hauser, Peter J.; and Marco, Francis W., to Milliken Research Corporation. Textile materials having durable soil release and moisture transport characteristics and process for producing same. 4,164,392, Cl. 8-18.00R.
Hautmann, Horst. Insect repellent. 4,164,561, Cl. 424-29.000.
Hayashi, Hisao, to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-ten. Cartridge locking device for an automatic gun. 4,164,088, Cl. 42-17.000.
Hayashi, Josaburo: *See*—
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,164,528, Cl. 264-62.000.
Haynes, Clarence C.: *See*—
Remsnyder, Duane C.; and Haynes, Clarence C., 4,164,644, Cl. 219-433.000.
Haynes, John R.: *See*—
Dorn, Gordon L.; and Haynes, John R., 4,164,449, Cl. 435-30.000.
Hch. Bertrams Aktiengesellschaft: *See*—
Kuhnlein, Hans L.; and Muller, Wolfgang-Dieter, 4,164,441, Cl. 159-13.00A.
Heinrich, Theodore M., to Westinghouse Electric Corp. Wireless emergency power interrupting system for multibranch circuits. 4,164,771, Cl. 361-1.000.
Heintz, Frieder; and Jansche, Walter, to Robert Bosch GmbH. Vibration rejecting impact sensor, particularly to trigger a vehicular collision safety system. 4,164,263, Cl. 280-735.000.
Heitmann, Jurgen; and Maly, Hans-Peter, to Robert Bosch GmbH. Method and apparatus for digitally encoding color video signals having guadrature modulated subcarriers. 4,164,749, Cl. 358-13.000.
Hellens, Robert L.: *See*—
Gibbons, John F.; and Hellens, Robert L., 4,164,443, Cl. 176-50.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Finkensiep, Friedhelm, 4,164,385, Cl. 425-204.000.
Reinwald, Elmar; Smolka, Heinz; and Schwuger, Milan J., 4,164,430, Cl. 134-13.000.
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, to Akzo N.V. Method of producing dialyzing membrane. 4,164,437, Cl. 156-167.000.
Henrich KG, Firma: *See*—
Henrich, Werner, 4,164,331, Cl. 242-25.00R.
Henrich, Werner, to Henrich KG, Firma. Slide guide device for moving wire and the like. 4,164,331, Cl. 242-25.00R.
Henry Voyt Machine Co. Inc.: *See*—
Graebner, Heinz, 4,164,343, Cl. 251-315.000.
Herbst, Walter B.; and Lazar, Ralph M., to Tenneco Chemicals, Inc. Frame structure. 4,164,105, Cl. 52-202.000.
Herczog, Andrew: *See*—
Aronson, Bernard S.; Herczog, Andrew; and Murphy, James A., 4,164,455, Cl. 204-38.00A.
Hernandez, Walter. Optical lens grinder device. 4,164,097, Cl. 51-101.0LG.
Herr, John A.; Brown, Jack; Peterson, Wesley R.; and Jaffe, Wolfgang, to Singer Company, The. Sewing machine motor speed limiting by pattern selection. 4,164,192, Cl. 112-158.00E.
Hertell, Siegfried, to Barmag Barmer Maschinenfabrik AG. Rotary vane vacuum pump with filter means for inlet. 4,164,384, Cl. 418-47.000.
Hervig, Harold C., to Minnesota Mining and Manufacturing Company. Insulative corona discharge suppressing sheath for high voltage cable splices. 4,164,620, Cl. 174-73.00R.
Hesse, Jurgen; and Grund, Peter, to Messer Griesheim GmbH. Device for deburring workpieces. 4,164,103, Cl. 51-417.000.
Hettche, Albert: *See*—
Patsch, Manfred; and Hettche, Albert, 4,164,500, Cl. 260-239.900.
Hewitt, Edward G., to New England Envelope Manufacturing Co. Container. 4,164,313, Cl. 229-31.00R.
Hewlett-Packard Company: *See*—
Chu, David C., 4,164,648, Cl. 235-92.0FQ.
Finlayson, Dana C.; Gatzke, Ronald D.; and Stettiner, Robert L., 4,164,215, Cl. 128-696.000.
Heydenreich, Lee: *See*—
Higby, Philip J., 4,164,329, Cl. 241-294.000.
Hieda, Shozo: *See*—
Shiraki, Takeshi; Hieda, Shozo; and Ninomiya, Tomokazu, 4,164,531, Cl. 264-115.000.
Higbee, Wallace C.; and Rumpf, Robert J., to Firestone Tire & Rubber Company, The. Dual spool positive drive retractor. 4,164,336, Cl. 242-107.40A.
Higby, Philip J., to Heydenreich, Lee. Chipper roller and knives therefor. 4,164,329, Cl. 241-294.000.
Hilbert, Francis H.; and Parker, Norman W., to Motorola, Inc. AM stereo receiver with improved correction signals. 4,164,623, Cl. 179-1.0GS.
Hildebrandt, William J.: *See*—
Rathbun, Richard H.; and Hildebrandt, William J., 4,164,334, Cl. 242-84.800.
Hilgner, Otto L.; and Gouldey, Donald. Leg holding machine. 4,164,056, Cl. 17-21.000.
Hill, David C.: *See*—
Kulwicki, Bernard M.; Trenkler, George; and Hill, David C., 4,164,147, Cl. 73-362.00R.
Hill, Lorimer K.: *See*—
Landsburg, George F.; and Hill, Lorimer K., 4,164,733, Cl. 340-347.0NT.

Hill, Richard N., to W. R. Grace & Co. Production of stabilized wet process phosphoric acid. 4,164,550, Cl. 423-321.00R.

Hilleman, Maurice R.: *See*—
Provost, Philip J.; and Hilleman, Maurice R., 4,164,566, Cl. 424-89.000.

Hiller, Walther: *See*—
Scheffels, Wilhelm; Koy, Johannes; Rappold, Franz; Hiller, Walther; and Steigerwald, Karl H., 4,164,641, Cl. 219-121.0EM.

Hingorani, Narain G., to Electric Power Research Institute, Inc. AC fault current limiting circuit. 4,164,772, Cl. 361-58.000.

Hinlein, Sigmund: *See*—
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,766, Cl. 360-97.000.
Kaseta, Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,769, Cl. 360-106.000.

Hirasawa, Masataka, to Toyko Shibaura Electric Co., Ltd. Electronic apparatus using complementary MOS transistor dynamic clocked logic circuits. 4,164,666, Cl. 307-208.000.

Hirose, Fuminori: *See*—
Sawairi, Hitoshi; Hirose, Fuminori; and Konishikawa, Kaoru, 4,164,778, Cl. 361-409.000.

Hitachi, Ltd.: *See*—
Homma, Noriyuki, 4,164,791, Cl. 365-190.000.
Ichikawa, Norio; Sato, Kanemasa; and Ueno, Sadayasu, 4,164,462, Cl. 204-195.00S.
Oguro, Tomokatsu, 4,164,684, Cl. 315-39.510.
Sakamoto, Masakatsu; Uchida, Kenji; and Karino, Takafumi, 4,164,359, Cl. 406-121.000.
Ura, Mitsuru; Miyata, Kenji; Suzuki, Takaya; and Ogawa, Takuzo, 4,164,436, Cl. 148-174.000.

Hitco: *See*—
Shaffer, Robert C., 4,164,601, Cl. 428-284.000.

Hodson, Derek A.: *See*—
Brickell, Christopher G.; and Hodson, Derek A., 4,164,220, Cl. 128-185.000.

Hoechst Aktiengesellschaft: *See*—
Berger, Harald; Quentin, Karl-Ernst; and Weil, Ludwig, 4,164,482, Cl. 252-428.000.

Hoelzler, Georg, to Siemens Aktiengesellschaft. Apparatus for examining bodies through scanning by means of ultrasound. 4,164,213, Cl. 128-660.000.

Hoene, Richard; Jung, Dietmar; Schenck, Hans-Uwe; and Spoor, Herbert, to BASF Aktiengesellschaft. Manufacture of polymers in bead form from water-soluble, ethylenically unsaturated monomers. 4,164,613, Cl. 526-201.000.

Hoerbiger & Co.: *See*—
Riedel, Albert F., 4,164,238, Cl. 137-512.150.

Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with O-alkyl-O-trifluoromethylsulphinylphenyl-thiono(-thiol)-phosphoric acid esters. 4,164,575, Cl. 424-216.000.

Hoffmann-La Roche Inc.: *See*—
Westley, John, 4,164,586, Cl. 424-285.000.

Holland Mechanics B.V.: *See*—
Damman, Cornelis C., 4,164,133, Cl. 72-12.000.

Hollowell, George T., to Gas Research Institute. Pulse combustion system for heating of air. 4,164,210, Cl. 126-110.00R.

Holmes, Marion D. Adjustable waist band for jeans. 4,164,044, Cl. 2-237.000.

Homeyer, Bernhard: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,164,575, Cl. 424-216.000.

Homma, Noriyuki, to Hitachi, Ltd. Semiconductor memory with equal word line and reference line voltage drop. 4,164,791, Cl. 365-190.000.

Hopkins Manufacturing Corporation: *See*—
Thomas, Robert R., 4,164,077, Cl. 33-348.000.

Horiba, Ltd.: *See*—
Matumoto, Syozo; and Okamoto, Mitsuhiro, 4,164,653, Cl. 250-301.000.

Hornung, Robert M.: *See*—
Delaporte, Francois X.; Hornung, Robert M.; Lamouroux, Anne-Marie; Lebesnerais, Gerard M.; and Nuez, Jean-Paul J., 4,164,668, Cl. 307-303.000.

Hosaka, Kiyokazu, to Olympus Optical Company. Endoscope film feeding device. 4,164,333, Cl. 242-71.200.

Hosoya, Nobukazu, to Sanyo Electric Co., Ltd. VIR killer signal generator for color television receiver. 4,164,750, Cl. 358-26.000.

Hossbach, Rudolf: *See*—
Eiselt, Gunter; and Hossbach, Rudolf, 4,164,162, Cl. 83-651.100.

Houseman, Henry J.; and Nowicki, Richard W., to Eaton Corporation. Control apparatus for industrial trucks. 4,164,121, Cl. 60-486.000.

Howard, Walter D.; and McDonald, David I., to Cincinnati Milacron Inc. Conveyor for processing. 4,164,391, Cl. 432-124.000.

Hrlic, Frank F.: *See*—
Tudor, Herbert E.; and Hrlic, Frank F., 4,164,709, Cl. 325-21.000.

Hsu, Hui-pin, to United States of America, Navy. Single mode fiber-to-channel waveguide through-line coupler. 4,164,363, Cl. 350-96.170.

Hubbard, Joseph T.: *See*—
Nolan, Douglas C.; and Hubbard, Joseph T., 4,164,151, Cl. 73-663.000.

Hucke, Hans. Heat exchange device. 4,164,254, Cl. 165-65.000.

Hucker, David J.; and Reynolds, Richard W., to Sundstrand Corporation. Load sharing system. 4,164,661, Cl. 307-57.000.

Hudson, James A., Jr.: *See*—
Boggs, Luther M.; and Hudson, James A., Jr., 4,164,703, Cl. 324-54.000.

Hughes Aircraft Company: *See*—
Jensen, William E., 4,164,734, Cl. 340-347.0AD.

Hughes, Alexander W., Jr., to Janex Corporation. Toy phonograph apparatus. 4,164,353, Cl. 274-1.00A.

Hugo Miebach GmbH: *See*—
Ulmer, Klaus, 4,164,638, Cl. 219-100.000.

Human, Hendrik G. C.: *See*—
Butler, Louis R. P.; and Human, Hendrik G. C., 4,164,654, Cl. 250-426.000.

Humerickhouse, Billy J.: *See*—
Beatty, Bobby D.; Daniel, Russell D.; and Humerickhouse, Billy J., 4,164,186, Cl. 102-37.800.

Hunt, Harold R., to Phillips Petroleum Company. Carbon black pellet and method and apparatus for producing same. 4,164,533, Cl. 264-117.000.

Hunt, Herbert H.; and Worcester, Harold S. Fuel gas production. 4,164,397, Cl. 48-209.000.

Hunter, LeRoy: *See*—
Nandagiri, Arun; Tripathi, Uma; and Hunter, LeRoy, 4,164,562, Cl. 424-47.000.

Hunter, Robert H., to Trailer Eye, Inc. Directional trailer turning signaling device. 4,164,737, Cl. 340-686.000.

Hunyar, Csaba K., to Capitol Records, Inc. Phonograph record eccentricity tester. 4,164,075, Cl. 33-174.00Q.

Hurt, James S. Portable cigarette making machine. 4,164,229, Cl. 131-55.000.

Hutchinson, Florence M., executrix: *See*—
Hutchinson, William M., deceased; and Hutchinson, Florence M., executrix, 4,164,471, Cl. 252-1.000.

Hutchinson, William M., deceased; and by Hutchinson, Florence M., executrix, to Phillips Petroleum Company. Constant boiling admixtures. 4,164,471, Cl. 252-1.000.

I.S.C. Chemicals Limited: *See*—
Fuller, George, 4,164,517, Cl. 260-646.000.

Ichikawa, Hiroki: *See*—
Miyazi, Kazumi; and Ichikawa, Hiroki, 4,164,637, Cl. 200-86.500.

Ichikawa, Norio; Sato, Kanemasa; and Ueno, Sadayasu, to Hitachi, Ltd. Oxygen sensor. 4,164,462, Cl. 204-195.00S.

Ichikawa, Yataro; and Yamaji, Teizo, to Teijin Limited. Process for producing diphenyls. 4,164,518, Cl. 585-427.000.

Igashira, Toshihiko; Yamaguchi, Shunzo; Kawai, Hisasi; Morino, Seiji; and Umeda, Naoki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition apparatus for rotary piston engine. 4,164,261, Cl. 180-54.00R.

Igeta, Harutoshi. A/C Circuit for combining an automobile radio speaker with speakers of an automobile stereophonic system. 4,164,625, Cl. 179-1.0SW.

Igusa, Kazuo: *See*—
Ikushima, Heizi; Nakano, Hiroto; Igusa, Kazuo; and Bessho, Sadao, 4,164,569, Cl. 424-174.000.

Ikeda, Tomoaki: *See*—
Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,164,421, Cl. 96-33.000.

Ikeuchi, Takashi: *See*—
Nishio, Hiroshi; Nakagawa, Ryuichi; and Ikeuchi, Takashi, 4,164,478, Cl. 252-135.000.

Ikushima, Heizi; Nakano, Hiroto; Igusa, Kazuo; and Bessho, Sadao, to Chugau Seiyaku Kabushiki Kaisha. Stabilized soft gelatin capsule composition of 1 α-hydroxy-vitamin D. 4,164,569, Cl. 424-174.000.

"Il Gas Interale" S.p.A.: *See*—
Vitali, Roberto; Villa, Sergio; and Lotti, Costante, 4,164,548, Cl. 423-242.000.

Illy, Hugo: *See*—
Schmidt, Andreas; Illy, Hugo; Kirchmayr, Rudolf; and Schmitter, Andre, 4,164,611, Cl. 521-89.000.

Imai, Isao; and Muto, Mitsuru, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Hydraulic servomechanism. 4,164,167, Cl. 91-363.00R.

Imamura, Masanaga; Sakai, Hisashi; Sugiyama, Hiroaki; and Ozawa, Seiji, to Ricoh Company Limited. Cap with supply stopper for use with containers. 4,164,307, Cl. 222-182.000.

Imperial Chemical Industries Limited: *See*—
Grimble, Brian J.; and Rouse, Michael R., 4,164,361, Cl. 312-236.000.

Inaba, Masao; Yuasa, Kazumi; and Sonoda, Michiaki, to Nippon Electric Co., Ltd. Stationary-picture transmission system utilizing a digital memory technique. 4,164,760, Cl. 358-183.000.

Inagaki, Tetsuhiko: *See*—
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Ellefson, Larry P.; Brooks, Robert J.; Real, Kenneth G.; and Manthey, John A., 4,164,180, Cl. 101-93.340.

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Hughes, Alexander W., Jr., 4,164,353, Cl. 274-1.00A.

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Johnson, Charles E., to Double A Products Company. Variable differential pressure unloading valve apparatus. 4,164,342, Cl. 251-28.000.

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Johnson, Larry C.: *See*—
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Jones, Brian, to General Engineering Company (Radcliffe) Limited, The. Production of combustible products from waste materials. 4,164,396, Cl. 44-1.00D.

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Costantini, Michel; and Jouffret, Michel, 4,164,516, Cl. 260-586.00P.

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Hayashi, Hisao, 4,164,088, Cl. 42-17.000.

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Kanetake, Norio, 4,164,435, Cl. 148-153.000.

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Kaiser, Hermann; Nellums, Richard A.; and Olson, Jerry A., to Eaton Corporation. Fluid flowmeter. 4,164,144, Cl. 73-213.000.

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Tokuda, Masahiro; Tamura, Tadaaki; Kajimoto, Hikokusu; Shimada, Takafumi; Oyamoto, Toshiya; and Ochiai, Setsumi, 4,164,484, Cl. 260-2.300.

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Kampfer, Michael L.: *See*—
Kampfer, John H.; Kampfer, Michael L.; and Martens, Philip A., 4,164,048, Cl. 4-292.000.
Kanetake, Norio, to Kabushiki Kaisha Kito. Method for heat treatment of link chains. 4,164,435, Cl. 148-153.000.
Kannapell, David H., to American Air Filter Company, Inc. Wet scrubbing device. 4,164,399, Cl. 55-223.000.
Kao Soap Co., Ltd.: *See*—
Kawahara, Yoshiharu; and Ono, Toshio, 4,164,506, Cl. 260-410.90R.
Karino, Takafumi: *See*—
Sakamoto, Masakatsu; Uchida, Kenji; and Karino, Takafumi, 4,164,359, Cl. 406-121.000.
Karkau, Lawrence E., to Karphen Lift Company. Automatic lift assembly. 4,164,292, Cl. 414-545.000.
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Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., to Data General Corporation. Disc memory apparatus magnetic head carriage manual control. 4,164,766, Cl. 360-97.000.
Kaseta. Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., to Data General Corporation. Cross band coupling for stepper-motor-driven, rigid magnetic disc. 4,164,769, Cl. 360-106.000.
Kasiewicz, Stanley J. Control circuit for load-leveling shock absorbers. 4,164,664, Cl. 307-118.000.
Kastilahn, William C.; and von Braun, Leopold, to Teletype Corporation. Stepping motor excitation. 4,164,696, Cl. 318-696.000.
Katagi, Kazuo, to RCA Corporation. Reduction of target shift in coordinate converter. 4,164,739, Cl. 343-5.0SC.
Katagiri, Katsuo: *See*—
Doi, Yoshikazu; Katagiri, Katsuo; and Yoshikawa, Kazuo, 4,164,752, Cl. 358-55.000.
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Cooper, Glenn D.; Katchman, Arthur; and Shank, Charles P., 4,164,493, Cl. 260-42.180.
Kato, Makoto; Velie, Larry N.; and Baverstock, John L., to Metropolitan Circuits, Inc. Plural probe circuit card fixture using a vacuum collapsed membrane to hold the card against the probes. 4,164,704, Cl. 324-73.0PC.
Kaufmann, Karl E., to DeMag Aktiengesellschaft. Motorized overhead trolley. 4,164,187, Cl. 104-93.000.
Kausel, Ernst; and Haas, Helmut, to Klockner Humboldt Deutz Aktiengesellschaft. Vibratory ball or tube mill. 4,164,328, Cl. 241-175.000.
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Kawai, Hisasi: *See*—
Igashira, Toshihiko; Yamaguchi, Shunzo; Kawai, Hisasi; Morino, Seiji; and Umeda, Naoki, 4,164,261, Cl. 180-54.00R.
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Kawanabe, Tsuyoshi: *See*—
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Gustison, Robert A., 4,164,417, Cl. 75-84.000.
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Kelp, Fritz, to Kraftwerk Union Aktiengesellschaft. Cooling tower with forced ventilation and natural draft. 4,164,256, Cl. 165-125.000.
Kemira Oy: *See*—
Harju-Laeraty, Pontus A., 4,164,582, Cl. 424-273.00R.
Kempka, Dorothy E. Adjustable plant support. 4,164,094, Cl. 47-47.000.
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Peart, M. Virginia; DeWitt, David P.; and Kern, Susan T., 4,164,643, Cl. 219-411.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Barnert, Heiko; Perec, Mieczyslaw; and Struck, Bernd D., 4,164,457, Cl. 204-129.000.
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Baldwin, Roger A.; Davis, Robert E.; Leonard, Robert E.; and Rhodes, Donald E., 4,164,466, Cl. 208-177.000.
Kessler, Erich: *See*—
Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kessler, Erich, 4,164,603, Cl. 428-398.000.
Kessler, Milton. Weather strip and method of its manufacture. 4,164,599, Cl. 428-92.000.
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Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Bun, Isaak M.; and Kevvai, Arnold A., 4,164,425, Cl. 106-89.000.
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Okai, Sakuo; and Kimoto, Koichi, 4,164,422, Cl. 96-67.000.
Kimura, Akio; Wada, Osamu; Matsui, Michikage; and Ozaki, Kiyotaka, to Teijin Limited. Method of producing a polyester filament yarn having a high level of twist. 4,164,116, Cl. 57-282.000.
Kimura, Makoto: *See*—
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King, Harold R. Electrical communication signalling device. 4,164,731, Cl. 340-286.00R.
King Industries, Inc.: *See*—
Gallacher, Lawrence V.; and King, Robert G., 4,164,474, Cl. 252-33.000.
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Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Inking mechanism. 4,164,185, Cl. 101-348.000.
Kirchmayr, Rudolf: *See*—
Schmidt, Andreas; Illy, Hugo; Kirchmayr, Rudolf; and Schmitter, Andre, 4,164,611, Cl. 521-89.000.
Kitagawa, Junji: *See*—
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Klauke, Erich: *See*—
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Kleeberg, Heinz, to Triumph Werke Nurnberg, A.G. Battery charging circuit. 4,164,698, Cl. 320-2.000.
Klein, Howard P.: *See*—
Waddill, Harold G.; and Klein, Howard P., 4,164,520, Cl. 525-484.000.
Klockner Humboldt Deutz Aktiengesellschaft: *See*—
Kausel, Ernst; and Haas, Helmut, 4,164,328, Cl. 241-175.000.
Klosz, Gustav. Skylight. 4,164,106, Cl. 52-72.000.
Klug, Frederic J.; Pasco, Wayne D.; and Prochazka, Svante, to General Electric Company. Alumina core having a high degree of porosity and crushability characteristics. 4,164,424, Cl. 106-38.900.
Kneip, George D., Jr.; Anderson, Marvin H.; and Gang, Robert E., to Varian Associates, Inc. Superconducting switch incorporating a steering diode. 4,164,777, Cl. 361-331.000.
Knepler, John T., to Dickey-john Corporation. Seed sensor. 4,164,669, Cl. 310-15.000.
Knight, Richard G. Chair. 4,164,356, Cl. 297-1.000.
Knippel, Willis H.: *See*—
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Kobayashi, Kazuo: *See*—
Asanomi, Koji; Takemoto, Yasunori; and Kobayashi, Kazuo, 4,164,205, Cl. 123-117.00R.
Koberstein, Edgar: *See*—
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Koizumi, Fumio: *See*—
Watanabe, Shotaro; Koizumi, Fumio; Tozawa, Katsutoshi; and Uetake, Shigeru, 4,164,476, Cl. 252-62.10P.
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Sawairi, Hitoshi; Hirose, Fuminori; and Konishikawa, Kaoru, 4,164,778, Cl. 361-409.000.
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Watanabe, Shotaro; Koizumi, Fumio; Tozawa, Katsutoshi; and Uetake, Shigeru, 4,164,476, Cl. 252-62.10P.
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Kosydar, Gerald M.; Rider, Albert J.; and Trussler, Alan A., to Singer Company, The. Basic simulator unit. 4,164,080, Cl. 35-12.00P.
Kowal, Leonard. Noise suppression apparatus. 4,164,758, Cl. 358-167.000.
Koy, Johannes: *See*—
Scheffels, Wilhelm; Koy, Johannes; Rappold, Franz; Hiller, Walther; and Steigerwald, Karl H., 4,164,641, Cl. 219-121.0EM.
Kraemling, Franz; Bartonitscheck, Norbert; Mattes, Gunther; and Nieven, Jakob, to Saint-Gobain Industries. Fire-proof window. 4,164,107, Cl. 52-232.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Kelp, Fritz, 4,164,256, Cl. 165-125.000.
Krajca, Kenneth E., to Sylvachem Corporation. Flow process for conjugating unconjugated unsaturation of fatty acids. 4,164,505, Cl. 260-405.600.
Krasnov, Mikhail M.: *See*—
Prokhorov, Alexandr M.; Vinogradov, Alexandr L.; Danileiko, Jury K.; Manenkov, Alexandr A.; Krasnov, Mikhail M.; and Naumidi, Leonid P., 4,164,222, Cl. 128-303.100.
Krasznai, Charles Z.; Meshkil, Donald J.; and Krumholtz, Morris, to U.S. Philips Corporation. Parallel safety coupling for X-ray table tilt drive. 4,164,656, Cl. 250-439.00R.
Kratz, Helmut: *See*—
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Kruzich, Joseph K., to Ford Motor Company. Method of forming a circuit board with integral terminals. 4,164,071, Cl. 29-625.000.

Kubo, Takaaki, to Tokico Ltd. Bleed screw cap. 4,164,241, Cl. 137-377.000.

Kucharczyk, Eckhard, to Siegenia-Frank KG. Baffle. 4,164,265, Cl. 181-224.000.

Kudo, Kin-ichi; Nakamura, Katsuyoshi; and Tazawa, Takatoshi, to Dainippon Ink & Chemicals, Inc. Radiation-curable prepolymer. 4,164,486, Cl. 260-22.0TN.

Kudo, Masayuki; Miura, Nobuo; and Hada, Shigetaka. Device for adjusting ignition timing in a motor-cycle provided with fluid coupling. 4,164,157, Cl. 74-860.000.

Kuhnlein, Hans L.; and Muller, Wolfgang-Dieter, to Hch. Bertrams Aktiengesellschaft; and Bayer Aktiengesellschaft. Process and apparatus for concentrating corrosive liquid using radiant heat. 4,164,441, Cl. 159-13.00A.

Kulik, Metro D., to Continental Oil Company. Method for converting calcium sulfoxy compounds into calcium carbonate compounds. 4,164,554, Cl. 423-567.00A.

Kulwicki, Bernard M.; Trenkler, George; and Hill, David C., to Texas Instruments Incorporated. Temperature sensing apparatus. 4,164,147, Cl. 73-362.00R.

Kupchan, Nancy Slater, executrix and trustee: *See*—
Kupchan, S. Morris, deceased; Jarvis, Bruce B.; and Dailey, Richard G., Jr., 4,164,584, Cl. 424-279.000.

Kupchan, S. Morris, deceased (by Kupchan, Nancy Slater, executrix and trustee); Jarvis, Bruce B.; and Dailey, Richard G., Jr., to Research Corporation. Anti-leukemic trichothecene epoxides. 4,164,584, Cl. 424-279.000.

Kupcikevicius, Vytautas: *See*—
Frey, Paul H.; and Kupcikevicius, Vytautas, 4,164,057, Cl. 17-49.000.

Kurz, John C. Anchor bracket. 4,164,194, Cl. 114-210.000.

L. R. Nelson Corporation: *See*—
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Funk, Norbert J.; and Puschel, Siegfried, 4,164,120, Cl. 60-431.000.
Tragl, Wilfried; and Forster, Franz, 4,164,169, Cl. 91-504.000.

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Linehan, Joseph J., to Samson Ocean Systems, Inc. Rope fitting. 4,164,378, Cl. 403-210.000.

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Frosien, Jurgen; Lischke, Burkhard; and Oelmann, Andreas, 4,164,658, Cl. 250-492.00A.

Lisco, Richard J.: *See*—
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Skatsche, Othmar; Fachbach, Heinz; Thien, Gerhard; List, Hans; and Greier, Josef, 4,164,262, Cl. 180-54.00A.

Lockett, William, Jr., to Exxon Research & Engineering Co. Steam generation. 4,164,202, Cl. 122-31.00R.

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Lutz, Alfons: *See—*
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Lykes, Robert E.: *See—*
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Ma, King W.; Potts, Irvin W.; and Malek, Russell A., to Dow Chemical Company, The. Process of regenerating a noble metal catalyst used in the reduction of organic nitro compounds. 4,164,481, Cl. 252-412.000.
Maassen, Wilhelm; Raasch, Hans; and Wassenhoven, Heinz-Georg, to W. Schlafhorst & Co. Device for transferring a thread to an unwound coil core. 4,164,330, Cl. 242-18.0PW.
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Maher, William M., to General Electric Company. Sealed motor mount for hand held device. 4,164,670, Cl. 310-50.000.
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Ma, King W.; Potts, Irvin W.; and Malek, Russell A., 4,164,481, Cl. 252-412.000.
Maly, Hans-Peter: *See—*
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Manenkov, Alexandr A.: *See—*
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Maraev, Sergei E.: *See—*
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Marass, Josef, to Georg Spiess GmbH. Sheet feeder with a side pulling mark. 4,164,349, Cl. 271-250.000.
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Marciniak, John J., to Harris Corporation. Apparatus for feeding signatures from a saddle to a trimmer. 4,164,159, Cl. 83-280.000.
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Marnett, Lawrence F.; and Barry, Veryl D., to C. J. Patterson Company. Anti-caking dough conditioning composition and method. 4,164,593, Cl. 426-653.000.
Marsh, Robin G., to EMI Limited. Correlation techniques. 4,164,728, Cl. 340-146.30Q.
Marsili, Leonardo: *See—*
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, 4,164,499, Cl. 260-239.30P.
Martens, Philip A.: *See—*
Kampfer, John H.; Kampfer, Michael L.; and Martens, Philip A., 4,164,048, Cl. 4-292.000.
Martin, Frank E., to Midori Anzen Company, Ltd. Personal escape breathing apparatus. 4,164,218, Cl. 128-142.700.
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von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., 4,164,558, Cl. 424-12.000.
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Nakai, Shiro; Asami, Kazuto; and Matono, Hirokuni, 4,164,232, Cl. 133-8.00R.
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Sawairi, Hitoshi; Hirose, Fuminori; and Konishikawa, Kaoru, 4,164,778, Cl. 361-409.000.
Mattes, Gunther: *See—*
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Matumoto, Syozo; and Okamoto, Mitsuhiro, to Horiba, Ltd.; and Daikin Kogyo Co., Ltd. Solvent for the extraction of oil fraction in water. 4,164,653, Cl. 250-301.000.
Maurer, Edward H.: *See—*
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Mazzorana, Alfred B., to Societe de Paris et du Rhone. Bearing made of stamped (embossed) sheet iron. 4,164,673, Cl. 310-89.000.
McAndrew, James R. Vehicle covering apparatus. 4,164,233, Cl. 135-5.00A.
McBurney, C. Alex: *See—*
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McCarthy, Shaun L.: *See—*
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McCarty, F. Walter, Jr.: *See—*
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McCarty, Ivan C.: *See—*
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McClenny, Carl O. Environmental protection system. 4,164,339, Cl. 244-163.000.
McComb, Tiney M. Snowman mold. 4,164,341, Cl. 249-126.000.
McCullough, Gail A.: *See—*
Allington, William B., deceased; Nelson, James W.; Cordry, Arthur L.; McCullough, Gail A.; and Mitchell, Don E., 4,164,464, Cl. 204-299.00R.
McDonald, David I.: *See—*
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McDonnell Douglas Corporation: *See—*
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McDonough Power Equipment, Inc.: *See—*
Jackson, Harold P.; and Boylston, Clifford H., 4,164,112, Cl. 56-295.000.
McElroy, Eugene L., to Enon Valley Industries, Inc. Resilient shield for vehicle wheel brake assemblies. 4,164,273, Cl. 188-218.00A.
McGrain, Thomas M., to Eastman Kodak Company. Separator member drive mechanism. 4,164,347, Cl. 271-3.100.
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McLaughlin, Richard S.; Plaski, Walter; and Swartzendruber, Robert F., to Docutel Corporation. Depository System. 4,164,179, Cl. 101-76.000.
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Meier, Siegfried, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for dosing bulk goods. 4,164,244, Cl. 141-156.000.
Meineke, Sam W.; and Nedell, Harold. Exhaust muffler. 4,164,267, Cl. 181-255.000.
Meister, Frank X. Method for coating surfaces of tools with fire and heat resistant composition. 4,164,596, Cl. 427-372.00B.
Mencacci, Samuel A., to FMC Corporation. Low liquid volume retort method. 4,164,590, Cl. 426-407.000.
Menikheim, Virginia C.: *See—*
Yung, Kai-Lim W.; Silverman, Bernard; and Menikheim, Virginia C., 4,164,600, Cl. 428-198.000.
Mercier, Andre, to Fives-Cail Babcock. Process and installation for the production of selected crystallization seeds for use in a sugar refinery. 4,164,429, Cl. 127-15.000.
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Meshkil, Donald J.: *See—*
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Hesse, Jurgen; and Grund, Peter, 4,164,103, Cl. 51-417.000.
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Meyer, Edwin W.: *See*—
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Michael, Harald R., to Electrolux GmbH. Vacuum-type water removal system for houses, factories, ships and the like. 4,164,049, Cl. 4-300.000.
Michaelis, Paul C., to Bell Telephone Laboratories, Incorporated. Magnetic bubble packaging arrangement. 4,164,790, Cl. 365-2.000.
Mid-Florida Mining Company: *See*—
Edgar, Allen C., 4,164,314, Cl. 229-33.000.
Midcon Pipeline Equipment Co.: *See*—
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Chang, Robert W. H., 4,164,563, Cl. 424-83.000.
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Minou, Shigemitsu; and Kamada, Shuhei, to Sanyo Electric Co., Ltd. Very high frequency tuner for eliminating image interference and stray capacitance effects. 4,164,710, Cl. 325-464.000.
Mira-Pak, Inc.: *See*—
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Mitsui Mining & Smelting Co., Ltd.: *See*—
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Miura, Nobuo: *See*—
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Miyata, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Roughened shutter curtain(s) for single lens reflex camera. 4,164,368, Cl. 354-23.00R.
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Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., to Cornell Research Foundation, Inc. Collagen drug delivery device. 4,164,559, Cl. 424-14.000.
Miyazi, Kazumi; and Ichikawa, Hiroki, to Olympus Optical Co., Ltd. Dual tread plate foot switch. 4,164,637, Cl. 200-86.500.
Mobil Oil Corp.: *See*—
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Fabel, David A., 4,164,602, Cl. 428-334.000.
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Moore, George G. I.; and Harrington, Joseph K., to Minnesota Mining and Manufacturing Company. Perfluoroalkylsulfonamidoaryl compounds. 4,164,412, Cl. 71-103.000.
Morey, Kenneth O.: *See*—
DuVall, Bruce W.; Valentine, James W.; and Morey, Kenneth O., 4,164,146, Cl. 73-304.00R.
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Moritsch, Denis J.; and Moritsch, Fred A. Device for use in mechanical power transmission system. 4,164,153, Cl. 74-217.00B.
Moritsch, Fred A.: *See*—
Moritsch, Denis J.; and Moritsch, Fred A., 4,164,153, Cl. 74-217.00B.
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Owen, Marler W.; and Morris, Ray E., 4,164,236, Cl. 137-240.000.
Morris, Ross E., to United States of America, Navy. Underwater acoustic absorber. 4,164,727, Cl. 340-5.00D.
Motorola, Inc.: *See*—
Fette, Bruce A., 4,164,626, Cl. 179-1.0SC.
Hilbert, Francis H.; and Parker, Norman W., 4,164,623, Cl. 179-1.0GS.
Mulder, Hendrik: *See*—
Duinker, Simon; and Mulder, Hendrik, 4,164,657, Cl. 250-445.00T.
Muller, Jean A.; and Shilling, Ray A., to Anchor Hocking Corporation. Display stand and arrangement thereof. 4,164,287, Cl. 211-134.000.
Muller, Rolf; and Wrobel, Gunter. Compact miniature fan. 4,164,690, Cl. 318-254.000.
Muller, Thomas P.; and Blatner, Philip J., to Caterpillar Tractor Co. Apparatus for a removable lamp. 4,164,780, Cl. 362-64.000.
Muller, Wolfgang-Dieter: *See*—
Kuhnlein, Hans L.; and Muller, Wolfgang-Dieter, 4,164,441, Cl. 159-13.00A.
Mumford, George V.: *See*—
Lohrman, Richard D.; and Mumford, George V., 4,164,377, Cl. 401-213.000.
Munib, Hamza I. Surgical instrument. 4,164,223, Cl. 128-321.000.
Munits, Ilya N.; and Maraev, Sergei E., to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti. Method of monitoring the phase state of material in processes involving crystallization from melt and apparatus for performing same. 4,164,659, Cl. 250-561.000.
Murata, Kazuo: *See*—
Osada, Hiroshi; and Murata, Kazuo, 4,164,270, Cl. 187-9.00R.
Murata Manufacturing Co., Ltd.: *See*—
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,164,676, Cl. 310-360.000.
Murphy, James A.: *See*—
Aronson, Bernard S.; Herczog, Andrew; and Murphy, James A., 4,164,455, Cl. 204-38.00A.
Murphy, Lawrence E.: *See*—
Dague, George I.; and Murphy, Lawrence E., 4,164,716, Cl. 330-252.000.
Musacchia, John. Emergency escape wall structure. 4,164,095, Cl. 52-1.000.
Muto, Mitsuru: *See*—
Imai, Isao; and Muto, Mitsuru, 4,164,167, Cl. 91-363.00R.
Myers, Stewart W.; and Spencer, Homer K., to Sandoz, Inc. Benzoxazine herbicides. 4,164,407, Cl. 71-88.000.
Myron, Clayton E., to Brooks & Perkins, Incorporated. Flexible rail roller system. 4,164,338, Cl. 244-118.00R.
Mysels, Karol J., to General Atomic Company. Wind driven power apparatus. 4,164,382, Cl. 415-2.000.
N.K.F. Groep B.V.: *See*—
Van Kesteren, Jacobus P. I., 4,164,617, Cl. 174-23.00C.
Nagata, Kiyoshi. Stereoscopic color television system with lenticular screen. 4,164,748, Cl. 358-3.000.
Nagayama, Shigekazu, to Nakamura, Hisao. Electronic combination controlled means. 4,164,776, Cl. 361-172.000.
Nakagawa, Ryuichi: *See*—
Nishio, Hiroshi; Nakagawa, Ryuichi; and Ikeuchi, Takashi, 4,164,478, Cl. 252-135.000.
Nakaguti, Osamu: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,164,497, Cl. 260-239.100.
Nakai, Shiro; Asami, Kazuto; and Matono, Hirokuni, to Glory Kogyo Kabushiki Kaisha. Constant coin flow rate coin processing apparatus. 4,164,232, Cl. 133-8.00R.
Nakamura, Hisao: *See*—
Nagayama, Shigekazu, 4,164,776, Cl. 361-172.000.
Nakamura, Katsuyoshi: *See*—
Kudo, Kin-ichi; Nakamura, Katsuyoshi; and Tazawa, Takatoshi, 4,164,486, Cl. 260-22.0TN.
Nakamura, Tadashi; Masuda, Mitsuru; and Tanaka, Hiroshi, to ISE Electronics Corporation; and Fujitsu Ten Limited. Fluorescent display tube. 4,164,683, Cl. 313-496.000.

Nakano, Hiroto: *See*—
Ikushima, Heizi; Nakano, Hiroto; Igusa, Kazuo; and Bessho, Sadao, 4,164,569, Cl. 424-174.000.
Nandagiri, Arun; Tripathi, Uma; and Hunter, LeRoy, to American Cyanamid Company. Aerosol hair spray containing an ethyl or butyl monoester of a copolymer of maleic acid and a vinyl monomer. 4,164,562, Cl. 424-47.000.
NAPCO Security Systems, Inc.: *See*—
Stockdale, Roy, 4,164,736, Cl. 340-530.000.
Napp Systems (USA), Inc.: *See*—
Okai, Sakuo; and Kimoto, Koichi, 4,164,422, Cl. 96-67.000.
National Computer Systems, Inc.: *See*—
Gysling, Walter, 4,164,765, Cl. 360-92.000.
National Research Development Corporation: *See*—
Carlow, Charles A., 4,164,291, Cl. 414-136.000.
Pobgee, Peter J., 4,164,622, Cl. 178-18.000.
Nauchno-Issledovatelsky Institut Po Bezopasnosti Rabot V Gornoi Promyshlennosti: *See*—
Timoshenko, Alexandr T.; Nazarenko, Vladimir I.; Krigman, Felix E.; and Gusev, Mikhail G., 4,164,699, Cl. 323-75.00A.
Naumidi, Leonid P.: *See*—
Prokhorov, Alexandr M.; Vinogradov, Alexandr L.; Danileiko, Jury K.; Manenkov, Alexandr A.; Krasnov, Mikhail M.; and Naumidi, Leonid P., 4,164,222, Cl. 128-303.100.
Nazarenko, Vladimir I.: *See*—
Timoshenko, Alexandr T.; Nazarenko, Vladimir I.; Krigman, Felix E.; and Gusev, Mikhail G., 4,164,699, Cl. 323-75.00A.
Nedell, Harold: *See*—
Meineke, Sam W.; and Nedell, Harold, 4,164,267, Cl. 181-255.000.
Nellums, Richard A.: *See*—
Kaiser, Hermann; Nellums, Richard A.; and Olson, Jerry A., 4,164,144, Cl. 73-213.000.
Nelson, James W.: *See*—
Allington, William B., deceased; Nelson, James W.; Cordry, Arthur L.; McCullough, Gail A.; and Mitchell, Don E., 4,164,464, Cl. 204-299.00R.
Nelson, Kurt, to De Laval Separator Company, The. Centrifuge with automatic sludge discharge. 4,164,317, Cl. 233-20.00A.
Nelson, Thomas E., to General Electric Company. Liquid level indicating device. 4,164,197, Cl. 116-227.000.
Nemit, Jeffrey T., to International Telephone and Telegraph Corporation. Multibeam slot array. 4,164,742, Cl. 343-768.000.
Neuman, Richard F., to Eaton Corporation. Clearance sensing brake adjuster. 4,164,272, Cl. 188-196.00D.
Neurath, Robert A.: *See*—
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,164,565, Cl. 424-89.000.
New England Envelope Manufacturing Co.: *See*—
Hewitt, Edward G., 4,164,313, Cl. 229-31.00R.
New York Blood Center, Inc.: *See*—
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,164,565, Cl. 424-89.000.
Newby, Billie J., to United States of America, Energy. Method for calcining nuclear waste solutions containing zirconium and halides. 4,164,479, Cl. 252-301.10W.
Newman, Dwight C. Seed planting method for cereal grains and grasses. 4,164,190, Cl. 111-1.000.
Newton, Alwin B., to Borg-Warner Corporation. Absorption refrigeration system and control. 4,164,128, Cl. 62-105.000.
Nichols, Donald S.: *See*—
Renjilian, Armen; Nichols, Donald S.; and Hartigan, Richard J., Jr., 4,164,530, Cl. 264-103.000.
Nieven, Jakob: *See*—
Kraemling, Franz; Bartonitscheck, Norbert; Mattes, Gunther; and Nieven, Jakob, 4,164,107, Cl. 52-232.000.
Ninomiya, Tomokazu: *See*—
Shiraki, Takeshi; Hieda, Shozo; and Ninomiya, Tomokazu, 4,164,531, Cl. 264-115.000.
Nippon Electric Co., Ltd.: *See*—
Inaba, Masao; Yuasa, Kazumi; and Sonoda, Michiaki, 4,164,760, Cl. 358-183.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ogita, Minoru, 4,164,624, Cl. 179-1.0GD.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Fujita, Yukio; Iwanami, Teruo; and Akamatsu, Yoshimi, 4,164,529, Cl. 264-565.000.
Nippon Kogaku K.K.: *See*—
Kimura, Shuji; Akasaka, Shigeo; Daitoku, Koichi; Hasegawa, Hiroshi; and Kimura, Makoto, 4,164,370, Cl. 354-243.000.
Nippon Soken, Inc.: *See*—
Akita, Sigeyuki; and Kitagawa, Junji, 4,164,706, Cl. 324-208.000.
Nishikawa, Masanori; and Hattori, Masao, to Yoshino Kogyosho Co., Ltd. Frosted bottle of saturated polyester. 4,164,298, Cl. 215-1.00C.
Nishio, Hiroshi; Nakagawa, Ryuichi; and Ikeuchi, Takashi, to Lion Fat & Oil Co., Ltd., The. Process for improving granular detergents. 4,164,478, Cl. 252-135.000.
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, to Murata Manufacturing Co., Ltd. Piezoelectric crystalline film of zinc oxide containing addative elements. 4,164,676, Cl. 310-360.000.
Nissan Motor Company, Limited: *See*—
Osada, Hiroshi; and Murata, Kazuo, 4,164,270, Cl. 187-9.00R.
Nitto Boseki Co., Ltd.: *See*—
Noji, Toshio; Shono, Hiroaki; and Wakasa, Isao, 4,164,401, Cl. 65-1.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Suzuki, Naoyuki; Wada, Yoji; and Furuno, Akihisa, 4,164,612, Cl. 526-62.000.
Nix, Norbert. Magnetic thickness gauge of the magnet adhesion type using drive means with a governor to raise the magnet. 4,164,707, Cl. 324-230.000.
Noji, Toshio; Shono, Hiroaki; and Wakasa, Isao, to Nitto Boseki Co., Ltd. Curved orifice plate for forming glass fibers. 4,164,401, Cl. 65-1.000.
Nolan, Douglas C.; and Hubbard, Joseph T., to Mechanical Technology, Inc. Random vibration generator. 4,164,151, Cl. 73-663.000.
Nolan, John M.: *See*—
Reed, Bradley O.; and Nolan, John M., 4,164,155, Cl. 74-687.000.
Noma, Ichiro; and Taniguchi, Kazuo, to Noma Komuten Company Limited. Apparatus for measuring quantity of asphalt ingredient in an asphalt compound. 4,164,655, Cl. 250-436.000.
Noma Komuten Company Limited: *See*—
Noma, Ichiro; and Taniguchi, Kazuo, 4,164,655, Cl. 250-436.000.
Noomen, Arie; and Wolters, Egbert, to Akzo N.V. U.V.-curable coating composition. 4,164,459, Cl. 204-159.180.
Nordin, Kent A. R., to Rimbo Tekniska Fabrik Rimpac AB. Method of making bags. 4,164,170, Cl. 93-35.00H.
Nordisk Insulinlaboratorium: *See*—
Hansen, Jorgen F., 4,164,495, Cl. 260-112.00B.
Norfield Corporation: *See*—
Beasley, Donald R., 4,164,389, Cl. 425-406.000.
Normalair-Garrett (Holdings) Limited: *See*—
Carnegie, Alistair L., 4,164,042, Cl. 2-2.10R.
Northern Telecom Limited: *See*—
Cielo, Paolo; and Westwood, William D., 4,164,745, Cl. 346-140.00R.
Walling, Jorg-Hein; and Bouffard, Jean, 4,164,245, Cl. 141-250.000.
Northrop Corporation: *See*—
Biricik, Vahram W.; Chun, Kang R.; Gresko, Laurence S.; and Barnett, John S., 4,164,677, Cl. 313-35.000.
Nowicki, Richard W.: *See*—
Houseman, Henry J.; and Nowicki, Richard W., 4,164,121, Cl. 60-486.000.
Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Bun, Isaak M.; and Kevvai, Arnold A. Cement and process for producing same. 4,164,425, Cl. 106-89.000.
Nuez, Jean-Paul J.: *See*—
Delaporte, Francois X.; Hornung, Robert M.; Lamouroux, Anne-Marie; Lebesnerais, Gerard M.; and Nuez, Jean-Paul J., 4,164,668, Cl. 307-303.000.
N.V. Optische Industrie "De Oude Delft": *See*—
Duinker, Simon; and Mulder, Hendrik, 4,164,657, Cl. 250-445.00T.
N.V. Verenigde Instrumentenfabrieken Enraf-Nonius: *See*—
Zeijdel, August-Eden; and Teunissen, Rudolf B., 4,164,350, Cl. 272-70.000.
O'Brien, John P. Golf swing practice mat. 4,164,352, Cl. 273-187.00A.
Occidental Research Corporation: *See*—
Caesar, Michael B., 4,164,398, Cl. 55-186.000.
Ochiai, Setsumi: *See*—
Tokuda, Masahiro; Tamura, Tadaaki; Kajimoto, Hikokusu; Shimada, Takafumi; Oyamoto, Toshiya; and Ochiai, Setsumi, 4,164,484, Cl. 260-2.300.
Oelberg, George R. Packer and loader unit for a motor vehicle. 4,164,293, Cl. 414-525.000.
Oelmann, Andreas: *See*—
Frosien, Jurgen; Lischke, Burkhard; and Oelmann, Andreas, 4,164,658, Cl. 250-492.00A.
Ogawa, Takuzo: *See*—
Ura, Mitsuru; Miyata, Kenji; Suzuki, Takaya; and Ogawa, Takuzo, 4,164,436, Cl. 148-174.000.
Ogawa, Toshio: *See*—
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,164,676, Cl. 310-360.000.
Ogino, Kiyoshi, to Central Glass Company, Limited. Method of producing lumps of tangled fibers. 4,164,534, Cl. 264-117.000.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Demodulation circuits of FM stereophonic receivers. 4,164,624, Cl. 179-1.0GD.
Oguro, Tomokatsu, to Hitachi, Ltd. Magnetrons. 4,164,684, Cl. 315-39.510.
Ohya, Junichi: *See*—
Morita, Yoshiharu; Ohya, Junichi; and Shirasaka, Tadashi, 4,164,577, Cl. 424-251.000.
Oikawa, Masahiro, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for preventing incorrect collating of signatures. 4,164,651, Cl. 250-216.000.
Okai, Sakuo; and Kimoto, Koichi, to Napp Systems (USA), Inc. Water developable, photopolymer printing plates having ink-repulsive non-image areas. 4,164,422, Cl. 96-67.000.
Okamoto, Mitsuhiro: *See*—
Matumoto, Syozo; and Okamoto, Mitsuhiro, 4,164,653, Cl. 250-301.000.
Okawa, Yuuki; and Suzuki, Sumiharu, to Tokai Metals Co., Ltd. Laminated thermal insulation sheeting. 4,164,605, Cl. 428-593.000.
Okazaki, Hiroshi. Coat hanger stand. 4,164,288, Cl. 211-207.000.
Okitsu, Kingo; Asanomi, Koji; Harada, Setsuo; and Takemoto, Yasunori, to Toyo Kogyo Co., Ltd. Exhaust gas recirculation means. 4,164,207, Cl. 123-119.00A.
Okitsu, Kingo; Asanomi, Koji; Harada, Setsuo; and Takemoto, Yasunori, to Toyo Kogyo Co., Ltd. Exhaust gas recirculation means. 4,164,208, Cl. 123-119.00A.

Oku, Teruo: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,164,497, Cl. 260-239.100.

Okubo, Shigeo. Method and system for monitoring the angular deformation of structural elements. 4,164,149, Cl. 73-594.000.

Ollivier, Yves; and Jacob, Michel, to Compagnie Industrielle Des Telecommunications Cit-Alcatel. Time base for synchronous generation of frame and clock pulses. 4,164,629, Cl. 179-15.0BS.

Olson, Jerry A.: *See—*
Kaiser, Hermann; Nellums, Richard A.; and Olson, Jerry A., 4,164,144, Cl. 73-213.000.

Olsson, Robert G.; and Turkdogan, Ethem T., to United States Steel Corporation. Desulfurization of hot reducing gas. 4,164,544, Cl. 423-230.000.

Olympus Optical Company: *See—*
Hosaka, Kiyokazu, 4,164,333, Cl. 242-71.200.

Olympus Optical Co., Ltd.: *See—*
Fukuoka, Kenji; and Anami, Takayuki, 4,164,762, Cl. 358-304.000.
Miyazi, Kazumi; and Ichikawa, Hiroki, 4,164,637, Cl. 200-86.500.

Omori, Mamoru: *See—*
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,164,528, Cl. 264-62.000.

Onnen, James H., to American Air Filter Company, Inc. Damper assembly. 4,164,211, Cl. 126-285.00A.

Ono, Toshio: *See—*
Kawahara, Yoshiharu; and Ono, Toshio, 4,164,506, Cl. 260-410.90R.

Oppolzer, Wolfgang: *See—*
Achini, Roland; Oppolzer, Wolfgang; and Pfenninger, Emil, 4,164,583, Cl. 424-274.000.

Orban, Jean: *See—*
Vital, Zoltan; and Orban, Jean, 4,164,686, Cl. 315-241.00P.

Ortmanns, Gunther, to Saint-Gobain Industries. Fire-proof window. 4,164,108, Cl. 52-232.000.

Osada, Hiroshi; and Murata, Kazuo, to Nissan Motor Company, Limited. Mast support construction for fork lift truck. 4,164,270, Cl. 187-9.00R.

Osaka, Susumu: *See—*
Toda, Minoru; Osaka, Susumu; and Matsumoto, Yasushi, 4,164,756, Cl. 358-128.000.

Otausky, Paul: *See—*
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otausky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,766, Cl. 360-97.000.

Otavsky, Paul: *See—*
Kaseta, Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,769, Cl. 360-106.000.

Ovutime, Inc.: *See—*
Schuster, Samuel R., 4,164,212, Cl. 128-759.000.

Owen, Marler W.; and Morris, Ray E. Valve assembly with seat cleaning system. 4,164,236, Cl. 137-240.000.

Owens-Corning Fiberglas Corporation: *See—*
Canfield, Sheldon A., 4,164,177, Cl. 100-40.000.

Owens, Frank J.: *See—*
Christoe, Charles W.; and Owens, Frank J., 4,164,700, Cl. 324-0.5AH.

Owens-Illinois, Inc.: *See—*
Boling, Norman L., 4,164,432, Cl. 136-89.0PC.
Lohrman, Richard D.; and Mumford, George V., 4,164,377, Cl. 401-213.000.

Ownby, James C.: *See—*
Irick, Gether, Jr.; Ownby, James C.; and Wang, Richard H. S., 4,164,480, Cl. 252-402.000.

Oy Tampella AB: *See—*
Pennanen, Paavo, 4,164,315, Cl. 229-34.00R.

Oy. W. Rosenlew AB.: *See—*
Hartta, Matti O., 4,164,060, Cl. 29-25.190.

Oyama, Kenneth H.: *See—*
Lawler, John K., deceased; Mitchell, John W., Sr.; and Oyama, Kenneth H., 4,164,074, Cl. 32-32.000.

Oyamoto, Toshiya: *See—*
Tokuda, Masahiro; Tamura, Tadaaki; Kajimoto, Hikokusu; Shimada, Takafumi; Oyamoto, Toshiya; and Ochiai, Setsumi, 4,164,484, Cl. 260-2.300.

Oystese, Brigt, to A/S Apothekernes Laboratorium for Specialpreparater. Zinc bacitracin composition for use as a feed supplement and method for making the same. 4,164,572, Cl. 424-177.000.

Ozaki, Kiyotaka: *See—*
Kimura, Akio; Wada, Osamu; Matsui, Michikage; and Ozaki, Kiyotaka, 4,164,116, Cl. 57-282.000.

Ozawa, Seiji: *See—*
Imamura, Masanaga; Sakai, Hisashi; Sugiyama, Hiroaki; and Ozawa, Seiji, 4,164,307, Cl. 222-182.000.

P. Ferrero C. S.p.A.: *See—*
Dogliotti, Amilcare, 4,164,645, Cl. 219-452.000.

P. R. Mallory & Co., Inc.: *See—*
Vierow, William F., 4,164,066, Cl. 29-570.000.

Palac, Kazimir, to Zenith Radio Corporation. Shadow mask suspension system having bracket means integrally formed from the shadow mask assembly. 4,164,682, Cl. 313-404.000.

Palazzetti, Mario, to Fiat Societa' per Azioni. Plant for the production of electrical energy and heat. 4,164,660, Cl. 290-2.000.

Palitex Project Company, GmbH: *See—*
Franzen, Gustav, 4,164,115, Cl. 57-279.000.

Parker, Norman W.: *See—*
Hilbert, Francis H.; and Parker, Norman W., 4,164,623, Cl. 179-1.0GS.

Parquet, Donald J., to J. I. Case Company. Hydraulic pump unloading system. 4,164,119, Cl. 60-428.000.

Pasco, Wayne D.: *See—*
Klug, Frederic J.; Pasco, Wayne D.; and Prochazka, Svante, 4,164,424, Cl. 106-38.900.

Pasqualucci, Carmine: *See—*
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, 4,164,499, Cl. 260-239.30P.

Patel, Gordhanbhai N., to Allied Chemical Corporation. Production of radiation crosslinked polymeric compositions using diacetylenes. 4,164,458, Cl. 204-159.170.

Patrick, Michael D.: *See—*
Hannahs, Arnold E.; and Patrick, Michael D., 4,164,679, Cl. 315-241.00R.

Patsch, Manfred; and Hettche, Albert, to BASF Aktiengesellschaft. Pyrazoline compounds. 4,164,500, Cl. 260-239.900.

Paulson, Carrold H., Jr.: *See—*
Granahan, Edward A.; and Paulson, Carrold H., Jr., 4,164,433, Cl. 136-229.000.

Paulucci, Jeno F.: *See—*
Ahlgren, David W.; Hassell, David A.; and Zimmer, Elvis S., 4,164,591, Cl. 426-523.000.

Pearlman, Walter. Automatic smoking device. 4,164,230, Cl. 131-171.00R.

Peart, M. Virginia; DeWitt, David P.; and Kern, Susan T. Energy-efficient bi-radiant oven system. 4,164,643, Cl. 219-411.000.

Peavey Electronics Corp.: *See—*
Rhodes, Orville J., 4,164,163, Cl. 84-1.150.

Pechauer, Thomas C.: *See—*
Cenko, John; and Pechauer, Thomas C., 4,164,063, Cl. 29-420.500.

Peck, Gregory G. A. Stenciling apparatus having improved casing structure. 4,164,183, Cl. 101-114.000.

Peddinghaus, Rolf. Punching apparatus. 4,164,158, Cl. 83-191.000.

Pelzner, Roger B.: *See—*
Stark, Marvin M.; Rosenfeld, Jack B.; Pelzner, Roger B.; and Soelberg, Kenneth B., 4,164,214, Cl. 128-741.000.

Pennanen, Paavo, to Oy Tampella AB. Blank for boxes. 4,164,315, Cl. 229-34.00R.

Pennsylvania Sewing Research Corp.: *See—*
Glassman, Aaron, 4,164,083, Cl. 38-11.000.

Pequegnat, Willis E., to TerEco Corporation. Benthic aquatic biotal monitor. 4,164,199, Cl. 119-2.000.

Perec, Mieczyslaw: *See—*
Barnert, Heiko; Perec, Mieczyslaw; and Struck, Bernd D., 4,164,457, Cl. 204-129.000.

Pereda, Eugene F. Apparatus to test proper wiring of electrical wall receptacles especially if the ground and neutral wires are reversed with respect to the hot wire. 4,164,702, Cl. 324-51.000.

Pericomp Corporation: *See—*
Joannou, Kyriacos, 4,164,764, Cl. 360-77.000.

Perrin, Jack L., to Towlsaver, Inc. Soap dispenser including removable soap supply container positioner and stabilizer. 4,164,306, Cl. 222-181.000.

Perry, David H., deceased: *See—*
Gundlach, Robert W.; and Perry, David H., deceased, 4,164,372, Cl. 355-3.0DD.

Person, Orville W. Throat obstruction expulsion device. 4,164,216, Cl. 128-28.000.

Perugini, Giancarlo; and Marcaccioli, Enzo, to Montedison S.p.A. Plasma arc process for the production of chemical products in power form. 4,164,553, Cl. 423-440.000.

Peter, Glen O.: *See—*
Anderten, John R.; and Peter, Glen O., 4,164,172, Cl. 98-33.00R.

Peters, Robert W., to Greenleaf Corporation. Milling cutter with adjustment for face runout. 4,164,380, Cl. 407-36.000.

Peterson, Wesley R., to Singer Company, The. Sewing machine motor actuated pneumatic pump for needle threading. 4,164,191, Cl. 112-225.000.

Peterson, Wesley R.: *See—*
Herr, John A.; Brown, Jack; Peterson, Wesley R.; and Jaffe, Wolfgang, 4,164,192, Cl. 112-158.00E.

Petrolite Corporation: *See—*
Cheng, William J.; and Guthrie, David B., 4,164,472, Cl. 252-18.000.
Quinlan, Patrick M., 4,164,574, Cl. 424-199.000.

Pfenninger, Emil: *See—*
Achini, Roland; Oppolzer, Wolfgang; and Pfenninger, Emil, 4,164,583, Cl. 424-274.000.

Pfizer Inc.: *See—*
Hammen, Philip D.; and Milne, George M., Jr., 4,164,514, Cl. 260-570.50P.

Phillips Petroleum Company: *See—*
Bertus, Brent J., 4,164,519, Cl. 585-622.000.
Childs, William V., 4,164,616, Cl. 568-858.000.
Funk, Gary L., 4,164,451, Cl. 203-2.000.
Funk, Gary L.; and Smith, Dexter E., 4,164,452, Cl. 203-2.000.
Hunt, Harold R., 4,164,533, Cl. 264-117.000.
Hutchinson, William M., deceased; and Hutchinson, Florence M., executrix, 4,164,471, Cl. 252-1.000.
Jones, Brenton E.; and Reusser, Robert E., 4,164,140, Cl. 73-54.000.
Scott, Richard L., 4,164,545, Cl. 423-239.000.
Slagel, John E.; and Brock, Jack W., 4,164,540, Cl. 422-158.000.
Stapp, Paul R., 4,164,615, Cl. 560-246.000.

Phillips, Wendel G., to Monsanto Company. Phosphinylphthalimidines and their use as plant growth regulants. 4,164,406, Cl. 71-86.000.
Phoenix Royalty Associates, Inc.: *See—*
Clay, Edward L.; and Baker, Jerry L., 4,164,526, Cl. 264-45.300.
Piazza, Matthew R., to Maso-Therm Corporation. Process and apparatus for uniformly distributing glass fibers. 4,164,532, Cl. 264-115.000.
Pinckard, Joseph A., to Ekol Corporation, The. Method of controlling the rate of damping-off of plant seedlings and improving the rate of tree growth with treated cotton gin waste. 4,164,405, Cl. 71-79.000.
Pischiera, Enrico E. Pacing device for runners and the like. 4,164,732, Cl. 340-323.00R.
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McLaughlin, Richard S.; Plaski, Walter; and Swartzendruber, Robert F., 4,164,179, Cl. 101-76.000.
Plasticisers Limited: *See—*
Slack, Philip T., 4,164,161, Cl. 83-346.000.
Platz, Edward A., deceased; by Platz, Zelma H., executor; and by Lubas, William, executor. Venturi mixer. 4,164,541, Cl. 422-198.000.
Platz, Zelma H., executor: *See—*
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Granahan, Edward A.; and Paulson, Carrold H., Jr., 4,164,433, Cl. 136-229.000.
Pobgee, Peter J., to National Research Development Corporation. Graphical input apparatus for electrical equipment. 4,164,622, Cl. 178-18.000.
Pohle, Raimund: *See—*
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,164,437, Cl. 156-167.000.
Polytop Corporation: *See—*
Haggerty, Dennis A., 4,164,305, Cl. 222-4.000.
Ponder & Best Inc.: *See—*
Vital, Zoltan; and Orban, Jean, 4,164,686, Cl. 315-241.00P.
Ponsinet, Gerard: *See—*
Bourzat, Jean D.; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,164,579, Cl. 424-263.000.
Porta Systems Corp.: *See—*
Carney, William V., 4,164,774, Cl. 361-119.000.
Potts, Irvin W.: *See—*
Ma, King W.; Potts, Irvin W.; and Malek, Russell A., 4,164,481, Cl. 252-412.000.
Powell, B. J.: *See—*
Savage, Donald D.; Chambers, Robert V.; and Mills, Maurice T., 4,164,246, Cl. 144-2.00Z.
PPG Industries, Inc.: *See—*
Borman, Robert F., 4,164,587, Cl. 426-131.000.
Girgis, Mikhail M., 4,164,485, Cl. 260-5.000.
Prescott, Doris M., executrix: *See—*
Welty, Albert B., Jr., deceased; and Prescott, Doris M., executrix, 4,164,546, Cl. 423-239.000.
Previati, Augusto, to Industrie Pirelli, S.p.A. Device for vulcanizing conveyor belts and similar articles. 4,164,440, Cl. 156-583.100.
Price, Samuel: *See—*
Bean, Mervyn L.; and Price, Samuel, 4,164,165, Cl. 89-134.000.
Price, William G.: *See—*
Anthony, Donald R.; Bone, Lee, III; and Price, William G., 4,164,257, Cl. 166-113.000.
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, to New York Blood Center, Inc. Vaccine for active immunization containing hepatitis B surface antigen and associated antigen. 4,164,565, Cl. 424-89.000.
Prochazka, Svante: *See—*
Klug, Frederic J.; Pasco, Wayne D.; and Prochazka, Svante, 4,164,424, Cl. 106-38.900.
Procter & Gamble Company, The: *See—*
Johnson, Charles L., 4,164,588, Cl. 426-135.000.
Madison, Bryan L.; and Shulman, Joel I., 4,164,592, Cl. 426-547.000.
Prokhorov, Alexandr M.; Vinogradov, Alexandr L.; Danileiko, Jury K.; Manenkov, Alexandr A.; Krasnov, Mikhail M.; and Naumidi, Leonid P., to Fizichesky Institut Imeni P.N. Lebedeva Akademii Nauk SSSU of USSR; and Vsesojuzny Nauchno-Issledovatelsky Institut Glaznykh Boleznei. Laser ophthalmological unit. 4,164,222, Cl. 128-303.100.
Province, Joyce Perry, administratrix: *See—*
Gundlach, Robert W.; and Perry, David H., deceased, 4,164,372, Cl. 355-3.0DD.
Provost, Philip J.; and Hilleman, Maurice R., to Merck & Co., Inc. Hepatitis a virus cell culture in vitro. 4,164,566, Cl. 424-89.000.
Pullman Incorporated: *See—*
Hallam, Keith J.; and Knippel, Willis H., 4,164,188, Cl. 105-166.000.
Purex Corporation: *See—*
Townsend, Robert L., 4,164,055, Cl. 15-321.000.
Puschel, Siegfried: *See—*
Funk, Norbert J.; and Puschel, Siegfried, 4,164,120, Cl. 60-431.000.
Quentin, Karl-Ernst: *See—*
Berger, Harald; Quentin, Karl-Ernst; and Weil, Ludwig, 4,164,482, Cl. 252-428.000.
Quinlan, Patrick M., to Petrolite Corporation. Use of polyquaternary ammonium methylene phosphonates as microbiocides. 4,164,574, Cl. 424-199.000.
Raasch, Hans: *See—*
Maassen, Wilhelm; Raasch, Hans; and Wassenhoven, Heinz-Georg, 4,164,330, Cl. 242-18.0PW.
Raczynski, Michael E.; and Streiff, William G., to BASF Wyandotte Corporation. Detachable handles and drum assemblies. 4,164,300, Cl. 220-94.00R.
Radman, Anton J., Jr.: *See—*
Janssen, Donovan M.; and Radman, Anton J., Jr., 4,164,768, Cl. 360-99.000.
Ragle, Herbert U.: *See—*
Gyi, Ko K.; and Ragle, Herbert U., 4,164,767, Cl. 360-98.000.
Raible, Donald A., to Bentley Laboratories, Inc. Blood treating device and method of operation. 4,164,468, Cl. 210-23.00R.
Raible, Donald A.: *See—*
Bentley, Donald J.; and Raible, Donald A., 4,164,221, Cl. 128-214.00R.
Rank Organisation Limited, The: *See—*
Matchell, Raymond, 4,164,761, Cl. 358-215.000.
Rappold, Franz: *See—*
Scheffels, Wilhelm; Koy, Johannes; Rappold, Franz; Hiller, Walther; and Steigerwald, Karl H., 4,164,641, Cl. 219-121.0EM.
Rathbun, Richard H.; and Hildebrandt, William J., to Stanley Works, The. Tape measure hook and hook storage receptacle. 4,164,334, Cl. 242-84.800.
Raytheon Company: *See—*
Schilling, Hartmut, 4,164,461, Cl. 204-192.0EC.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,164,687, Cl. 315-384.000.
Catanese, Carmen A., 4,164,681, Cl. 313-400.000.
Katagi, Kazuo, 4,164,739, Cl. 343-5.0SC.
Matsumoto, Yasushi, 4,164,755, Cl. 358-128.000.
Steckler, Steven A.; and Balaban, Alvin R., 4,164,711, Cl. 325-464.000.
Stewart, Myron C., 4,164,782, Cl. 360-133.000.
Toda, Minoru; Osaka, Susumu; and Matsumoto, Yasushi, 4,164,756, Cl. 358-128.000.
Reade, Richard F.: *See—*
Beall, George H.; and Reade, Richard F., 4,164,610, Cl. 429-193.000.
Real, Kenneth G.: *See—*
Ellefson, Larry P.; Brooks, Robert J.; Real, Kenneth G.; and Manthey, John A., 4,164,180, Cl. 101-93.340.
Reavill, Joseph A., to General Dynamics Corporation. Solder preform loading method and apparatus. 4,164,064, Cl. 29-468.000.
Reed, Bradley O.; and Nolan, John M., to General Electric Company. All concentric multi-range synchronous shifting hydromechanical transmission including a multi-range concentric gear train package. 4,164,155, Cl. 74-687.000.
Reed, Bradley O., to General Electric Company. Full reversing hydromechanical steering transmission with multi-range synchronous shifting concentric gear train package. 4,164,156, Cl. 74-687.000.
Reilly, Robert A.: *See—*
Ward, Charles R.; and Reilly, Robert A., 4,164,628, Cl. 179-15.0BA.
Reinke, Orville H.: *See—*
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Reinwald, Elmar; Smolka, Heinz; and Schwuger, Milan J., to Henkel Kommanditgesellschaft auf Aktien. Method of washing materials while reversibly circulating wash liquid through a cation exchange resin. 4,164,430, Cl. 134-13.000.
Remsnyder, Duane C.; and Haynes, Clarence C., to Courtesy Interstate Corporation. Portable electrical heating unit with automatic cutoff. 4,164,644, Cl. 219-433.000.
Renjilian, Armen; Nichols, Donald S.; and Hartigan, Richard J., Jr., to Albany International Corp. Method of making monofilament from thermoplastic resin tapes. 4,164,530, Cl. 264-103.000.
Research Corporation: *See—*
Kende, Andrew S.; Tsay, Yuh-Geng; and Furuta, Takuya, 4,164,503, Cl. 260-365.000.
Kupchan, S. Morris, deceased; Jarvis, Bruce B.; and Dailey, Richard G., Jr., 4,164,584, Cl. 424-279.000.
Research Frontiers Incorporated: *See—*
Saxe, Robert L., 4,164,365, Cl. 350-362.000.
Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See—*
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,164,528, Cl. 264-62.000.
Reusser, Robert E.: *See—*
Jones, Brenton E.; and Reusser, Robert E., 4,164,140, Cl. 73-54.000.
Reynolds, Richard W.: *See—*
Hucker, David J.; and Reynolds, Richard W., 4,164,661, Cl. 307-57.000.
Rhodes, Donald E.: *See—*
Baldwin, Roger A.; Davis, Robert E.; Leonard, Robert E.; and Rhodes, Donald E., 4,164,466, Cl. 208-177.000.
Rhodes, Orville J., to Peavey Electronics Corp. Electric guitar circuitry. 4,164,163, Cl. 84-1.150.
Rhone-Poulenc Industries: *See—*
Bourzat, Jean D.; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,164,579, Cl. 424-263.000.
Costantini, Michel; and Jouffret, Michel, 4,164,516, Cl. 260-586.00P.
Ricoh Company Limited: *See—*
Imamura, Masanaga; Sakai, Hisashi; Sugiyama, Hiroaki; and Ozawa, Seiji, 4,164,307, Cl. 222-182.000.
Rider, Albert J.: *See—*
Kosydar, Gerald M.; Rider, Albert J.; and Trussler, Alan A., 4,164,080, Cl. 35-12.00P.

Riedel, Albert F., to Hoerbiger & Co. Closing plate for a ring valve. 4,164,238, Cl. 137-512.150.
Ries, Karl; Hannoschock, Kurt; and Simoneit, Gunter, to Mannesmann Aktiengesellschaft. System for inspecting tubes or pipes by means for ultrasonics. 4,164,150, Cl. 73-644.000.
Riis, Voldemar, to AB Vargarda Armaturfabrik. Thermostatic mixing valve for two fluids. 4,164,321, Cl. 236-12.00R.
Rimbo Tekniska Fabrik Rimpac AB: *See*—
Nordin, Kent A. R., 4,164,170, Cl. 93-35.00H.
Robache, Andre, to Fives-Cail Babcock. Self-propelled apparatus for cleaning beets. 4,164,052, Cl. 15-3.110.
Roberson, Carl, to Continental Group, Inc., The. Closure for steel drums with blow molded liners. 4,164,304, Cl. 220-465.000.
Robert Bosch GmbH: *See*—
Heintz, Frieder; and Jansche, Walter, 4,164,263, Cl. 280-735.000.
Heitmann, Jurgen; and Maly, Hans-Peter, 4,164,749, Cl. 358-13.000.
Sandau, Hartmut, 4,164,242, Cl. 138-30.000.
Weckenmann, Albert; and Haubner, Georg, 4,164,730, Cl. 340-168.00R.
Robert, Jean, to La Francaise Metallurgie. Sanding head including a dust extracting shaft casing. 4,164,101, Cl. 51-273.000.
Rockwell International Corporation: *See*—
Gehri, Dennis C., 4,164,416, Cl. 75-72.000.
Rodaway, Keith S., to Everest & Jennings, Inc. Narrow frame wheelchair. 4,164,354, Cl. 280-42.000.
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; Bernt, Erich; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Activation of cholesterol oxidase for cholesterol assay. 4,164,448, Cl. 435-11.000.
Rolls-Royce Limited: *See*—
Amsbury, Clifford R.; and Warren, Eric, 4,164,694, Cl. 318-578.000.
Rosemount Engineering Company Limited: *See*—
Johnston, James S., 4,164,539, Cl. 422-96.000.
Rosenfeld, Jack B.: *See*—
Stark, Marvin M.; Rosenfeld, Jack B.; Pelzner, Roger B.; and Soelberg, Kenneth B., 4,164,214, Cl. 128-741.000.
Rossetti, Vittorio; Marsili, Leonardo; and Pasqualucci, Carmine, to Archifar Laboratori Chimico Farmachologici S.p.A. Rifamycin compounds. 4,164,499, Cl. 260-239.30P.
Rossi, Pietro P.: *See*—
Siclari, Francesco; and Rossi, Pietro P., 4,164,508, Cl. 260-413.000.
Rothbuhr, Lothar: *See*—
Schumacher, Wilhelm; Rothbuhr, Lothar; and Armster, Joachim, 4,164,423, Cl. 106-20.000.
Rouse, Michael R.: *See*—
Grimble, Brian J.; and Rouse, Michael R., 4,164,361, Cl. 312-236.000.
Rubin, Albert L.: *See*—
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,164,559, Cl. 424-14.000.
Ruder, Gary C. F.: *See*—
Clough, David; and Ruder, Gary C. F., 4,164,570, Cl. 424-175.000.
Rudolph, Frank W.: *See*—
Greatbatch, Wilson; Mead, Ralph T.; McLean, Robert L.; Rudolph, Frank W.; and Frenz, Norbert W., 4,164,070, Cl. 29-623.200.
Ruegg, Franz: *See*—
Fluck, Rene; and Ruegg, Franz, 4,164,277, Cl. 198-369.000.
Rumpf, Robert J.: *See*—
Higbee, Wallace C.; and Rumpf, Robert J., 4,164,336, Cl. 242-107.40A.
Rutimann, Kurt: *See*—
Anderegg, Max; and Rutimann, Kurt, 4,164,649, Cl. 235-480.000.
Rysti, Alpo. Method and apparatus for cutting off defective portions of lengths of timber. 4,164,248, Cl. 144-312.000.
Sacco, John A.: *See*—
Di Giacomo, Hector L.; and Sacco, John A., 4,164,310, Cl. 228-58.000.
Sacre, Louis, to Societe D'Electricite Mors. Servo controlled tape indicating device. 4,164,695, Cl. 318-653.000.
Saint-Gobain Industries: *See*—
Kraemling, Franz; Bartonitscheck, Norbert; Mattes, Gunther; and Nieven, Jakob, 4,164,107, Cl. 52-232.000.
Ortmanns, Gunther, 4,164,108, Cl. 52-232.000.
Sakai, Hisashi: *See*—
Imamura, Masanaga; Sakai, Hisashi; Sugiyama, Hiroaki; and Ozawa, Seiji, 4,164,307, Cl. 222-182.000.
Sakamoto, Masakatsu; Uchida, Kenji; and Karino, Takafumi, to Hitachi, Ltd. Hydraulic transportation apparatus for solid materials. 4,164,359, Cl. 406-121.000.
Salem, Robert J., to General Electric Company. Piezoelectric audible indicator circuit. 4,164,735, Cl. 340-384.00E.
Samson Ocean Systems, Inc.: *See*—
Linehan, Joseph J., 4,164,378, Cl. 403-210.000.
Sandau, Hartmut, to Robert Bosch GmbH. Valve for a pressure tank. 4,164,242, Cl. 138-30.000.
Sanderson, James J.: *See*—
Gregorovich, Basil V.; and Sanderson, James J., 4,164,488, Cl. 260-29.4UA.
Sando Iron Works, Co. Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,164,051, Cl. 8-149.100.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Co. Ltd. Continuous dyeing method for thick textile materials. 4,164,051, Cl. 8-149.100.
Sandor, Louis; and Wendt, Albert T., to AMSTED Industries Incorporated. Brinell testing apparatus. 4,164,141, Cl. 73-81.000.
Sandoz, Inc.: *See*—
Myers, Stewart W.; and Spencer, Homer K., 4,164,407, Cl. 71-88.000.
Sandoz Ltd.: *See*—
Achini, Roland; Oppolzer, Wolfgang; and Pfenninger, Emil, 4,164,583, Cl. 424-274.000.
Stakelbeck, Hans-Peter, 4,164,050, Cl. 8-149.100.
Sandvik Conveyor GmbH: *See*—
Schermutzki, Konrad; and Stabler, Gerhard, 4,164,387, Cl. 425-371.000.
Stabler, Gerhard, 4,164,386, Cl. 425-371.000.
Sanyo Electric Co., Ltd.: *See*—
Hosoya, Nobukazu, 4,164,750, Cl. 358-26.000.
Minou, Shigemitsu; and Kamada, Shuhei, 4,164,710, Cl. 325-464.000.
Sato, Kanemasa: *See*—
Ichikawa, Norio; Sato, Kanemasa; and Ueno, Sadayasu, 4,164,462, Cl. 204-195.00S.
Sato, Masaaki; and Kosaka, Shinya, to ACF Industries, Incorporated. Rotor of coreless motor and method of manufacturing same. 4,164,675, Cl. 310-268.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Cartridge-type ink supply device for labeling machines. 4,164,182, Cl. 101-103.000.
Satomi, Takeo: *See*—
Jinno, Naoyoshi; Satomi, Takeo; Kawakami, Shigenao; Shibata, Tatsumi; and Isaoka, Shin-ichi, 4,164,413, Cl. 71-103.000.
Savage, Donald D.; Chambers, Robert V.; and Mills, Maurice T., to Powell, B. J., a part interest. Tree processing machine. 4,164,246, Cl. 144-2.00Z.
Sawairi, Hitoshi; Hirose, Fuminori; and Konishikawa, Kaoru, to Matsushita Electric Industrial Co., Ltd. Printed circuit board. 4,164,778, Cl. 361-409.000.
Sawyer, Philip N.; and Freeman, Leon D., to Cardioquest Corporation. Anti-thrombotic compound and method of making and using the same for pharmaceutical purposes. 4,164,585, Cl. 424-280.000.
Saxe, Robert L., to Research Frontiers Incorporated. Light valve for controlling the transmission of radiation comprising a cell and a stabilized liquid suspension. 4,164,365, Cl. 350-362.000.
Schafer, Heinrich, to Thyssen Industrie Aktiengesellschaft. Transmission for two-worm press with counter running worms. 4,164,154, Cl. 74-665.0GD.
Scheffels, Wilhelm, to Steigerwald Strahltechnik GmbH. Method and apparatus for positioning a charged particle beam. 4,164,640, Cl. 219-121.0EM.
Scheffels, Wilhelm; Koy, Johannes; Rappold, Franz; Hiller, Walther; and Steigerwald, Karl H., to Steigerwald Strahltechnik GmbH. Method and apparatus for energy beam welding with filling material. 4,164,641, Cl. 219-121.0EM.
Scheffer, John H.: *See*—
Jones, Paul; and Scheffer, John H., 4,164,268, Cl. 182-150.000.
Schenck, Hans-Uwe: *See*—
Hoene, Richard; Jung, Dietmar; Schenck, Hans-Uwe; and Spoor, Herbert, 4,164,613, Cl. 526-201.000.
Schering Aktiengesellschaft: *See*—
Arndt, Friedrich; and Boroschewski, Gerhard, 4,164,414, Cl. 71-111.000.
Schermutzki, Konrad; and Stabler, Gerhard, to Sandvik Conveyor GmbH. Apparatus for producing sheet material. 4,164,387, Cl. 425-371.000.
Scheurecker, Werner, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Strand guiding roller for a continuous casting plant. 4,164,252, Cl. 164-448.000.
Schieman, Richard D., to Standard Oil Company, The. Multi-grade 80W-140 gear oil. 4,164,475, Cl. 252-46.700.
Schilling, Hartmut, to Raytheon Company. Semiconductor integrated circuit structures and manufacturing methods. 4,164,461, Cl. 204-192.0EC.
Schlecht, Helmut: *See*—
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, 4,164,511, Cl. 260-465.00E.
Schmidt, Andreas; Illy, Hugo; Kirchmayr, Rudolf; and Schmitter, Andre, to Ciba-Geigy Corporation. Aromatic sulfonyl hydrazides and semicarbazides as chemical blowing agents. 4,164,611, Cl. 521-89.000.
Schmidt, Jerry D., to United States of America, Air Force. Deception circuitry for automatic range gate tracking in fire control radar. 4,164,741, Cl. 343-18.00E.
Schmitter, Andre: *See*—
Schmidt, Andreas; Illy, Hugo; Kirchmayr, Rudolf; and Schmitter, Andre, 4,164,611, Cl. 521-89.000.
Schmitz, Werner: *See*—
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,164,437, Cl. 156-167.000.
Schnier, Edward A., to A-T-O, Inc. Spotting machine. 4,164,281, Cl. 198-394.000.
Schober, Michael A., to Borg-Warner Corporation. Continuous line for plating on metal strip material. 4,164,454, Cl. 204-28.000.
Scholer, Fred R.: *See*—
Brubaker, Gaylen R.; and Scholer, Fred R., 4,164,394, Cl. 8-107.000.
Schrock, Rudy J. Preventive apron. 4,164,217, Cl. 128-138.00R.

Schumacher, Wilhelm; Rothbuhr, Lothar; and Armster, Joachim, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Black pigmented UV hardening printing ink. 4,164,423, Cl. 106-20.000.

Schupner, Willard J., to Efdyn Corporation. Adjustable shock absorber. 4,164,274, Cl. 188-285.000.

Schuss, Jack J.; and Johnson, Larry C., to United States of America, Energy. Spectrometer employing optical fiber time delays for frequency resolution. 4,164,373, Cl. 356-316.000.

Schuster, Samuel R., to Ovutime, Inc. Devices for menstrual cycle phase determination. 4,164,212, Cl. 128-759.000.

Schwuger, Milan J.: *See—*
Reinwald, Elmar; Smolka, Heinz; and Schwuger, Milan J., 4,164,430, Cl. 134-13.000.

Scordato, Emil A.: *See—*
Irazoqui, Carlos A.; and Scordato, Emil A., 4,164,320, Cl. 235-375.000.

Scott/Chatham Company: *See—*
Wald, Stephen A., 4,164,400, Cl. 55-382.000.

Scott, Richard L., to Phillips Petroleum Company. Use of manganese dioxide absorbent in treating waste gases. 4,164,545, Cl. 423-239.000.

Seibold, Klaus: *See—*
Feldmann, Martin; Koberstein, Edgar; and Seibold, Klaus, 4,164,557, Cl. 423-600.000.

Seitz, Robert F.: *See—*
Fritz, William E.; Graves, Mark L.; and Seitz, Robert F., 4,164,189, Cl. 105-378.000.

Selmeczi, Joseph G., to Dravo Corporation. Lime scrubbing process for sulfur dioxide removal from gases. 4,164,549, Cl. 423-242.000.

Semanchik, Stephen: *See—*
Witt, Frank; and Semanchik, Stephen, 4,164,284, Cl. 206-217.000.

Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., to Texaco Inc. Control system for a furfural refining unit receiving light sour charge oil. 4,164,450, Cl. 196-14.520.

Set 'N' Forget Products Pty. Ltd.: *See—*
Gambling, Kenneth H., 4,164,200, Cl. 119-51.120.

Shaffer, Robert C., to Hitco. Coating for fibrous carbon material in boron containing composites. 4,164,601, Cl. 428-284.000.

Shank, Charles P.: *See—*
Cooper, Glenn D.; Katchman, Arthur; and Shank, Charles P., 4,164,493, Cl. 260-42.180.

Sheehan, Brian T.; Baymiller, Judith; and Eltz, Robert W., to E. R. Squibb & Sons, Inc. Ethanol as the major source of carbon and energy in penicillin production. 4,164,445, Cl. 435-46.000.

Sheinin, Evgeny I.; Belostotskaya, Nelli S.; and Yakovlev, Lev N., to Gosudarstvenny Nauchno-Issle-Dovatelsky Institut Stroitelnoi Keramiki Niistroikeramika. Installation for applying a coat to the entire inner surface of a sectionalized hollow item. 4,164,198, Cl. 118-315.000.

Shell Oil Company: *See—*
Blytas, George C.; and Deal, Carl H., 4,164,507, Cl. 260-412.500.
Carr, John B., 4,164,576, Cl. 424-248.540.

Shelstad, Richard J. Vehicle washing apparatus. 4,164,053, Cl. 15-97.00B.

Sheridan, John J.; Graddy, Willard E.; and Anderson, Willis H., to General Motors Corporation. Push-pull rotary system. 4,164,633, Cl. 200-4.000.

Shibata, Tatsumi: *See—*
Jinno, Naoyoshi; Satomi, Takeo; Kawakami, Shigenao; Shibata, Tatsumi; and Isaoka, Shin-ichi, 4,164,413, Cl. 71-103.000.

Shichman, Daniel, to Uniroyal, Inc. Nail-deflecting, inner-tube assembly for run-flat tires. 4,164,250, Cl. 152-205.000.

Shilling, Ray A.: *See—*
Muller, Jean A.; and Shilling, Ray A., 4,164,287, Cl. 211-134.000.

Shim, Hong S.: *See—*
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Tokuda, Masahiro; Tamura, Tadaaki; Kajimoto, Hikokusu; Shimada, Takafumi; Oyamoto, Toshiya; and Ochiai, Setsumi, 4,164,484, Cl. 260-2.300.

Shin-Etsu Chemical Co., Ltd.: *See—*
Itoh, Kunio; and Fukuda, Takeshi, 4,164,491, Cl. 260-37.0SB.

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Shinshu Seiki Kabushiki Kaisha: *See—*
Hanaoka, Seiji, 4,164,181, Cl. 101-99.000.

Shiraki, Takeshi; Hieda, Shozo; and Ninomiya, Tomokazu, to Mitsui Petrochemical Industries, Ltd. Injection molding of ultra high molecular weight polyethylene. 4,164,531, Cl. 264-115.000.

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Shofu Dental Manufacturing Company, Limited: *See—*
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Shono, Hiroaki: *See—*
Noji, Toshio; Shono, Hiroaki; and Wakasa, Isao, 4,164,401, Cl. 65-1.000.

Shore, Daniel B.; and Chatterjea, Probir K., to International Harvester Company. Clutch-brake steering mechanism for tractors. 4,164,276, Cl. 192-13.00R.

Shropshire, Joseph A.; and Tsien, Hsue C., to Exxon Research & Engineering Co. Method of making bipolar carbon-plastic electrode structure-containing multicell electrochemical device. 4,164,068, Cl. 29-623.100.

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Sickler, Jack R. Lap siding tool. 4,164,346, Cl. 269-321.00S.

Siclari, Francesco; and Rossi, Pietro P., to Snia Viscosa Societa' Nazionale Industria Viscosa S.p.A. Formyl alkenoic acids. 4,164,508, Cl. 260-413.000.

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Whitesides, George M.; Garrett, Patricia E.; and Siegel, Merrell G., 4,164,444, Cl. 435-92.00N.

Siegenia-Frank KG.: *See—*
Kucharczyk, Eckhard, 4,164,265, Cl. 181-224.000.

Siemens Aktiengesellschaft: *See—*
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Hoelzler, Georg, 4,164,213, Cl. 128-660.000.
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Witte, Hans H., 4,164,364, Cl. 350-96.170.

SIG Schweizerische Industrie-Gesellschaft: *See—*
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Meier, Siegfried, 4,164,244, Cl. 141-156.000.

Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kessler, Erich, to Akzona Incorporated. Filaments and fibers having discontinuous cavities. 4,164,603, Cl. 428-398.000.

Sight Lite, Inc.: *See—*
Jaksich, Milenko, 4,164,784, Cl. 362-282.000.

Siliconix Inc.: *See—*
Landsburg, George F.; and Hill, Lorimer K., 4,164,733, Cl. 340-347.0NT.

Silva, Frank A., to Amerace Corporation. Cable shield connecting device. 4,164,621, Cl. 174-78.000.

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Yung, Kai-Lim W.; Silverman, Bernard; and Menikheim, Virginia C., 4,164,600, Cl. 428-198.000.

Simic, Milutin, to Chevron Research Company. Plasticized sulfur composition. 4,164,428, Cl. 106-287.130.

Simko, Alexander P., to American Air Filter Company, Inc. Process for removing sulfur dioxide in a wet scrubber. 4,164,547, Cl. 423-242.000.

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Ries, Karl; Hannoschock, Kurt; and Simoneit, Gunter, 4,164,150, Cl. 73-644.000.

Simpson, Robert D., to Boeing Company, The. Method and apparatus for determining when a glide slope signal exceeds a predetermined level. 4,164,340, Cl. 244-186.000.

Singer Company, The: *See—*
Herr, John A.; Brown, Jack; Peterson, Wesley R.; and Jaffe, Wolfgang, 4,164,192, Cl. 112-158.00E.
Kosydar, Gerald M.; Rider, Albert J.; and Trussler, Alan A., 4,164,080, Cl. 35-12.00P.
Peterson, Wesley R., 4,164,191, Cl. 112-225.000.
Simon, David J.; and Costello, Edward C., 4,164,729, Cl. 340-347.0SY.

Sinka, Joseph V.; and Villa, Jose L., to Diamond Shamrock Corporation. Concrete having improved compressive strength. 4,164,426, Cl. 106-90.000.

Skala, Stephen F. Method for reducing thermal degradation of a heat exchange fluid. 4,164,253, Cl. 165-1.000.

Skatsche, Othmar; Fachbach, Heinz; Thien, Gerhard; List, Hans; and Greier, Josef, to List, Hans. Motor vehicle. 4,164,262, Cl. 180-54.00A.

Slack, Philip T., to Plasticisers Limited. Modified staple cutter. 4,164,161, Cl. 83-346.000.

Slagel, John E.; and Brock, Jack W., to Phillips Petroleum Company. Carbon black reactor. 4,164,540, Cl. 422-158.000.

Slegers, Frans, to U.S. Philips Corporation. Degaussing circuit in a color television receiver. 4,164,775, Cl. 361-150.000.

Smiley, Charles F., to Harris Corporation. System for communicating a periodic signal by means of coherent modulation. 4,164,757, Cl. 358-149.000.

Smillie, Charles M., III: *See—*
Finch, David A.; and Smillie, Charles M., III, 4,164,635, Cl. 200-33.00R.

Smith, Carl K., to Midcon Pipeline Equipment Co. Method of mixing and spraying concrete onto pipe. 4,164,597, Cl. 427-425.000.

Smith, Clinton R.: *See—*
Coupland, Keith; and Smith, Clinton R., 4,164,473, Cl. 252-32.70E.

Smith & Denison: *See—*
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Smith, Dexter E.: *See—*
Funk, Gary L.; and Smith, Dexter E., 4,164,452, Cl. 203-2.000.

Smith, Herman W., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-trans-4,5,13,14-tetradehydro-PGI$_1$compounds. 4,164,501, Cl. 260-346.220.

Smith, Herman W., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-trans-4,5,13,14-tetradehydro-PGI$_1$compounds. 4,164,502, Cl. 260-346.730.

Smith, Leonard S., to Century Mfg. Co. Shunt release and locking structure. 4,164,723, Cl. 336-133.000.

Smith, Milton B. Adjustable spinnaker header and rig therefor. 4,164,193, Cl. 114-111.000.

Smith, Otto J. M. Solar thermal electric power plant. 4,164,123, Cl. 60-641.000.

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Societe Anonyme pour L'Equipement Electrique des Vehicules S.E.V. MARCHAL: *See—*
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Societe de Paris et du Rhone: *See—*
Mazzorana, Alfred B., 4,164,673, Cl. 310-89.000.

Societe D'Electricite Mors: *See—*
Sacre, Louis, 4,164,695, Cl. 318-653.000.

Societe pour le Perfectionnement des Materiels et Equipements Aerospatiaux S.O.P.M.E.A.: *See—*
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Soelberg, Kenneth B.: *See—*
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Solar Pump Corporation: *See—*
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Solartron Electronic Group Limited, The: *See—*
Cushing, Brian M., 4,164,688, Cl. 315-389.000.

Soldner, Rudolf: *See—*
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Sonoda, Michiaki: *See—*
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Soubeyrat, Michel. Method for fixing protective sheets about rolls of material. 4,164,110, Cl. 53-409.000.

South African Inventions Development Corporation, The: *See—*
Butler, Louis R. P.; and Human, Hendrik G. C., 4,164,654, Cl. 250-426.000.
Coetzer, Johan, 4,164,608, Cl. 429-50.000.

Spacek, Karel: *See—*
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Spencer, Homer K.: *See—*
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Spirig, Ernst. Tinned copper braids for solder removing. 4,164,606, Cl. 428-605.000.

Spoor, Herbert: *See—*
Hoene, Richard; Jung, Dietmar; Schenck, Hans-Uwe; and Spoor, Herbert, 4,164,613, Cl. 526-201.000.

Sprecher & Schuh AG: *See—*
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Sprengling, Gerhard R.; and Cargnel, Louis A., to Westinghouse Electric Corp. Porous encapsulating composition for electrical apparatus. 4,164,619, Cl. 174-52.0PE.

Staats, David K. Document storage and access case. 4,164,309, Cl. 224-45.00R.

Stabler, Gerhard, to Sandvik Conveyor GmbH. Apparatus for producing sheet material. 4,164,386, Cl. 425-371.000.

Stabler, Gerhard: *See—*
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Stakelbeck, Hans-Peter, to Sandoz Ltd. Textile treatment process. 4,164,050, Cl. 8-149.100.

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Standard-Thomson Corporation: *See—*
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Rathbun, Richard H.; and Hildebrandt, William J., 4,164,334, Cl. 242-84.800.

Stapp, Paul R., to Phillips Petroleum Company. Conversion of conjugated dienes to diacyloxy olefins. 4,164,615, Cl. 560-246.000.

Stark, Marvin M.; Rosenfeld, Jack B.; Pelzner, Roger B.; and Soelberg, Kenneth B., to University of California, The Regents of the. Method and apparatus for measuring the sensitivity of teeth. 4,164,214, Cl. 128-741.000.

Steckler, Steven A.; and Balaban, Alvin R., to RCA Corporation. Tuning system including a memory for storing tuning information with user controls arranged to facilitate its programming. 4,164,711, Cl. 325-464.000.

Steeb, William R.; LeVeau, Robert W.; and Falck, Michael J., to Hallmark Cards, Incorporated. Album having picture receiving frame assembly in cover. 4,164,085, Cl. 40-152.000.

Steffen, Lawrence F.: *See—*
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Steigerwald, Gerhard: *See—*
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Steigerwald, Karl H.: *See—*
Scheffels, Wilhelm; Koy, Johannes; Rappold, Franz; Hiller, Walther; and Steigerwald, Karl H., 4,164,641, Cl. 219-121.0EM.

Steigerwald Strahltechnik GmbH: *See—*
Scheffels, Wilhelm, 4,164,640, Cl. 219-121.0EM.

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Steiner, Peter, to Foster Wheeler Energy Corporation. Pollution control system and method for the removal of sulfur oxides. 4,164,555, Cl. 423-569.000.

Stendel, Wilhelm: *See—*
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Stenzel, Kurt H.: *See—*
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Stephens, James B.: *See—*
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Sterrett, John P.; Carroll, Joseph P.; and Creager, Richard A., to United States of America, Agriculture. Mini-injector. 4,164,093, Cl. 47-57.500.

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Stewart, Myron C., to RCA Corporation. Locking mechanism for record package. 4,164,782, Cl. 360-133.000.

Stockdale, Roy, to NAPCO Security Systems, Inc. Apparatus for disabling an alarm after a predetermined operating period. 4,164,736, Cl. 340-530.000.

Stork Brabant B.V.: *See—*
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Stradella, Cinzia: *See—*
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Stradella, Fabio; and Stradella, Cinzia. Pressure gauge or pressure indicator having axially-operating internal members with visual indication. 4,164,196, Cl. 116-272.000.

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Raczynski, Michael E.; and Streiff, William G., 4,164,300, Cl. 220-94.00R.

Strub, Robert D. Method and apparatus for machining components for stairs. 4,164,249, Cl. 144-326.00R.

Struck, Bernd D.: *See—*
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Strunk, Kurt: *See—*
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Stubben, David R., to Atari, Inc. Voltage controlled oscillator. 4,164,759, Cl. 358-180.000.

Stubbs, Harvard P., to Solar Pump Corporation. Solar energy device. 4,164,166, Cl. 91-342.000.

Stueber, Harry K. Variable mode freezer. 4,164,129, Cl. 62-326.000.

Sugiyama, Hiroaki: *See—*
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Sullivan, Jack W. Ball and socket linkage and bearing assembly and method of fabricating. 4,164,062, Cl. 29-148.40A.

Sumitomo Chemical Company, Ltd.: *See—*
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Sundstrand Corporation: *See—*
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Superior Bands, Inc.: *See—*
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Superior Electric Company, The: *See—*
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Sutherland, Robert L., to Federal Paper Board Company, Inc. Tapered cup package. 4,164,286, Cl. 206-434.000.

Suzuki, Naoyuki; Wada, Yoji; and Furuno, Akihisa, to Nitto Chemical Industry Co., Ltd.; and Mitsubishi Rayon Co., Ltd. Process for producing water-soluble cationic polymers. 4,164,612, Cl. 526-62.000.

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Suzuki, Sumiharu: *See—*
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Suzuki, Takaya: *See—*
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Swanson, Hilmer I., to Harris Corporation. Polyphase PDM amplifier. 4,164,714, Cl. 330-10.000.

Swartzendruber, Robert F.: *See—*
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Swerling, Peter, to McDonnell Douglas Corporation. Focused synthetic array. 4,164,738, Cl. 343-5.0CM.

Swisher, Calvin C., Sr., to Wisconsin Centrifugal, Inc. Method for welding a metal coupling to a tube. 4,164,311, Cl. 228-161.000.

Swiss Aluminium Ltd.: *See—*
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Sylvachem Corporation: *See—*
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Sziklas, Edward A.; and Freiberg, Robert J., to United Technologies Corporation. Variable output coupled resonator. 4,164,366, Cl. 350-299.000.
Takahashi, Hirokazu, to Tokyo Shibaura Electric Co., Ltd. Magnetron device. 4,164,685, Cl. 315-105.000.
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Talbot, James R., to Fiber Industries, Inc. Method for making simulated spun-like ingrain yarn. 4,164,117, Cl. 57-289.000.
Tamai, Yasuo; Fujiyama, Masaaki; and Amari, Hiroshi, to Fuji Photo Film Co., Ltd. Leader or trailer tape for a magnetic recording medium. 4,164,604, Cl. 428-409.000.
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Tang, Ching W., to Eastman Kodak Company. Multilayer organic photovoltaic elements. 4,164,431, Cl. 136-89.0NB.
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Tannoy Products Limited: *See—*
Garner, Alex V.; and Townsend, Graham, 4,164,631, Cl. 179-115.50H.
Tapper, Robert. Iontophoretic burn-protection electrode structure. 4,164,226, Cl. 128-419.00R.
Tasch, Aloysious F., Jr., to Texas Instruments Incorporated. High capacity dynamic ram cell. 4,164,751, Cl. 357-41.000.
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Tateoka, Kiyoshi, to Tokico Ltd. Vacuum booster device. 4,164,168, Cl. 91-376.00R.
Taylor, David W.; and Fulton, Garland L., to Combustion Turbine Power, Inc. Turbine system using unclean fuel. 4,164,124, Cl. 60-683.000.
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Teepak, Inc.: *See—*
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Teijin Limited: *See—*
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Kimura, Akio; Wada, Osamu; Matsui, Michikage; and Ozaki, Kiyotaka, 4,164,116, Cl. 57-282.000.
Telaris Telecommunications, Inc.: *See—*
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Teledyne McCormick Selph, an operating div. of Teledyne Ind., Inc.: *See—*
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Teletype Corporation: *See—*
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Tenna Power Corporation: *See—*
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Teraji, Tsutomu: *See—*
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Texaco Inc.: *See—*
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Kulwicki, Bernard M.; Trenkler, George; and Hill, David C., 4,164,147, Cl. 73-362.00R.
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Kaseta, Robert G.; Daugherty, Lenn; Hinlein, Sigmund; Feldstein, Michael; Otavsky, Paul; Thackaberry, Harold; and Barrows, Robert E., 4,164,769, Cl. 360-106.000.
Thayer, Arnold A. Safety locking dispenser. 4,164,301, Cl. 220-253.000.
Theissen, Robert J., to Mobil Oil Corp. Salts of substituted phenoxybenzoic acids, compositions of the same and herbicidal use thereof. 4,164,408, Cl. 71-98.000.
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Theissen, Robert J., to Mobil Oil Corp. Esters of substituted phenoxybenzoic acids, compositions of the same and herbicidal use thereof. 4,164,410, Cl. 71-98.000.
Thiel, Ronald A.; and Maurer, Edward H., to General Dynamics Corporation Electronics Division. Thin film resistor having a thin layer of resistive metal of a nickel, chromium, gold alloy. 4,164,607, Cl. 428-621.000.
Thien, Gerhard: *See—*
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Thomas, Robert R., to Hopkins Manufacturing Corporation. Level indicating devices. 4,164,077, Cl. 33-348.000.
Thompson, N. H., to Superior Bands, Inc. Spindle drive adapter. 4,164,113, Cl. 57-104.000.
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Dubois, Jean-Claude, 4,164,754, Cl. 358-128.000.
Thurmond, George R. Feedback elimination system employing notch filter. 4,164,715, Cl. 330-85.000.
Thyssen Industrie Aktiengesellschaft: *See—*
Schafer, Heinrich, 4,164,154, Cl. 74-665.0GD.
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Timoshenko, Alexandr T.; Nazarenko, Vladimir I.; Krigman, Felix E.; and Gusev, Mikhail G., to Nauchno-Issledovatelsky Institut Po Bezopasnosti Rabot V Gornoi Promyshlennosti. Thermochemical combustible gas detector. 4,164,699, Cl. 323-75.00A.
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Kubo, Takaaki, 4,164,241, Cl. 137-377.000.
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Amey, Arnold, 4,164,237, Cl. 137-510.000.
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Perrin, Jack L., 4,164,306, Cl. 222-181.000.
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Townsend, Robert L., to Purex Corporation. Cleaning and disinfecting hard surfaces. 4,164,055, Cl. 15-321.000.
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Hirasawa, Masataka, 4,164,666, Cl. 307-208.000.
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Yabuki, Kazuyuki; and Iwasaki, Mitsuo, 4,164,114, Cl. 57-236.000.
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Hunter, Robert H., 4,164,737, Cl. 340-686.000.
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Kulwicki, Bernard M.; Trenkler, George; and Hill, David C., 4,164,147, Cl. 73-362.00R.
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Trungold, Emanuel H. Bolt tension indicating means. 4,164,164, Cl. 85-62.000.
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Kosydar, Gerald M.; Rider, Albert J.; and Trussler, Alan A., 4,164,080, Cl. 35-12.00P.
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Tsien, Hsue C.: *See—*
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Tudor, Herbert E.; and Hulic, Frank F. Signal priority device. 4,164,709, Cl. 325-21.000.
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Olsson, Robert G.; and Turkdogan, Ethem T., 4,164,544, Cl. 423-230.000.
Turner, Michael K.: *See—*
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Army: *See—*
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Newby, Billie J., 4,164,479, Cl. 252-301.10W.
Schuss, Jack J.; and Johnson, Larry C., 4,164,373, Cl. 356-316.000.
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Metcalf, Travis W., 4,164,753, Cl. 358-113.000.
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U.S. Philips Corporation: *See—*
Aagaard, Einar A., 4,164,632, Cl. 179-175.30R.
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Sziklas, Edward A.; and Freiberg, Robert J., 4,164,366, Cl. 350-299.000.
University of California, The Regents of the: *See—*
Stark, Marvin M.; Rosenfeld, Jack B.; Pelzner, Roger B.; and Soelberg, Kenneth B., 4,164,214, Cl. 128-741.000.
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Lucas, James G.; and Young, Alan C., 4,164,743, Cl. 343-854.000.
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Smith, Herman W., 4,164,501, Cl. 260-346.220.
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Urano, Fumio; and Takahashi, Norimichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Diopter-adjusting device for use in finder-interchangeable type single lens reflex camera. 4,164,369, Cl. 354-219.000.
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Vanderhye, Robert A., to Interfarm Corporation. Ground-supported poultry drinking fountain. 4,164,201, Cl. 119-81.000.
van der Lely, Cornelis. Soil cultivating implements. 4,164,258, Cl. 172-59.000.
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Van Kesteren, Jacobus P. I., to N.K.F. Groep B.V. Long watertight cable and sleeve joint. 4,164,617, Cl. 174-23.00C.
Van Peppen, Jan F.; and Fisher, William B., to Allied Chemical Corporation. Production of cyclohexanone. 4,164,515, Cl. 260-586.00P.
Varian Associates, Inc.: *See—*
Kneip, George D., Jr.; Anderson, Marvin H.; and Gang, Robert E., 4,164,777, Cl. 361-331.000.
Varian Mat GmbH: *See—*
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Varma, Ravi K., to E. R. Squibb & Sons, Inc. Steroidal[16α,17-b]naphthaleno-21-carboxylic acid esters. 4,164,504, Cl. 260-397.100.
Veaute, Georges, to Manufacture de Produits Chimiques Protex S.A. Antistatic textile materials. 4,164,535, Cl. 264-136.000.
Velie, Larry N.: *See—*
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Wada, Kinzo, 4,164,691, Cl. 318-254.000.
Viehrig, Wolfgang; and Sperber, Werner, to AGFA-Gavaert, A.G. Photographic developing machine. 4,164,371, Cl. 354-312.000.
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Vital, Zoltan; and Orban, Jean, to Ponder & Best Inc. Load current pulse control devices. 4,164,686, Cl. 315-241.00P.

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Vogt, B. Richard, to E. R. Squibb & Sons, Inc. 4H-s-triazolo[4,3-a][1,5]benzodiazepin-5-ones. 4,164,498, Cl. 260-239.30T.

Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Pyrazolo[1,5-c]quinazoline derivatives and related compounds. 4,164,578, Cl. 424-251.000.

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Vollers, Evert J., to Van Doorne's Transmissie B.V. Method of manufacturing a metallic belt of high strength, and apparatus for use in said method. 4,164,134, Cl. 72-183.000.

von Alten, Theodor: *See—*
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von Braun, Leopold: *See—*
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von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., to Massachusetts Institute of Technology. Method for optimizing reagents for agglutination reactions. 4,164,558, Cl. 424-12.000.

Voss, Richard E.: *See—*
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,164,067, Cl. 29-620.000.

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Wada, Kinzo, to Victor Company of Japan, Limited. Multiphase brushless DC motor using two Hall-effect generators. 4,164,691, Cl. 318-254.000.

Wada, Osamu: *See—*
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Wada, Yoji: *See—*
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Waddill, Harold G.; and Klein, Howard P., to Texaco Development Corporation. Accelerated cure of epoxy resins. 4,164,520, Cl. 525-484.000.

Wadleigh, Edward R., to Bell & Howell Company. Film transport system for microfilm reader. 4,164,367, Cl. 353-26.00R.

Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG): *See—*
Lange, Gerhard, 4,164,118, Cl. 59-31.000.

Wagner, Armand, to ARBED - Acieries Reunies de Burbach-Eich-Dudelange S.A. Method of cleaning phenol-containing waste waters. 4,164,469, Cl. 210-40.000.

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Wald, Stephen A., to Scott/Chatham Company. Filters. 4,164,400, Cl. 55-382.000.

Wallach, Ira, to Durham Industries, Inc. Toy cash register. 4,164,319, Cl. 235-1.00E.

Walling, Jorg-Hein; and Bouffard, Jean, to Northern Telecom Limited. Powder pushing device for filling cable. 4,164,245, Cl. 141-250.000.

Wallsten, Hans I. Method of preparing foodstuffs by means of boiling or steaming and means for performing the method. 4,164,174, Cl. 99-415.000.

Walworth, Bryant L.: *See—*
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Wandler, Donald, to McGraw-Edison Company. Sport light and ballast module. 4,164,783, Cl. 362-226.000.

Wang, Richard H. S.: *See—*
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Ward, Charles R.; and Reilly, Robert A., to International Telephone and Telegraph Corporation. Processor for multiple, continuous, spread spectrum signals. 4,164,628, Cl. 179-15.0BA.

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Watanabe, Muneo, to Yamamura Glass Co., Ltd. Strengthening of thin-walled, light glass containers. 4,164,402, Cl. 65-30.00E.

Watanabe, Shotaro; Koizumi, Fumio; Tozawa, Katsutoshi; and Uetake, Shigeru, to Konishiroku Photo Industry Co. Ltd. Developer for latent electrostatic image and process for preparation thereof. 4,164,476, Cl. 252-62.10P.

Waterbury, Nelson J. Vendable reclosable container. 4,164,303, Cl. 220-359.000.

Watson, Gary Q. Excavator for anchor holes. 4,164,082, Cl. 37-83.000.

Watson, John D. High-pressure-rotary-nozzle apparatus. 4,164,325, Cl. 239-252.000.

Weaver, Casimir P.: *See—*
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Webasto-Werk W. Baier GmbH & Co.: *See—*
Mitterer, Erik; and Lutz, Alfons, 4,164,692, Cl. 318-266.000.

Weber-Unger, Georg. Pad for nursing brassieres. 4,164,228, Cl. 128-461.000.

Weckenmann, Albert; and Haubner, Georg, to Robert Bosch GmbH. Externally controllable binary interrogation and decoding circuit, particularly for a remote control load selection system. 4,164,730, Cl. 340-168.00R.

Weibe, Gerald L. Encapsulated plug-in electrically conducting component. 4,164,726, Cl. 337-215.000.

Weigert, Frank J., to Du Pont de Nemours, E. I., and Company. Preparation of hydrogen cyanide. 4,164,552, Cl. 423-376.000.

Weil, Ludwig: *See—*
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Welty, Albert B., Jr., deceased; and by Prescott, Doris M., executrix, to Exxon Research & Engineering Co. Method of removing nitrogen oxides from gaseous mixtures. 4,164,546, Cl. 423-239.000.

Wendt, Albert T.: *See—*
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Western Electric Company, Inc.: *See—*
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Whitney, Eugene C.; and Gorden, Dale I., 4,164,705, Cl. 324-158.0MG.

Westley, John, to Hoffmann-La Roche Inc. Therapeutic agent for improving cardiovascular function. 4,164,586, Cl. 424-285.000.

Westvaco Corporation: *See—*
Carrigan, Robert J., 4,164,076, Cl. 33-181.00R.

Westwood, William D.: *See—*
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White, John M. Method for laying sod. 4,164,295, Cl. 414-786.000.

Whitesides, George M.; Garrett, Patricia E.; and Siegel, Merrell G., to Massachusetts Institute of Technology. Method for preparing adenosine triphosphate. 4,164,444, Cl. 435-92.00N.

Whitley, Elmer E., to Chem-X3, Inc. Fungicidal detergent composition. 4,164,477, Cl. 252-99.000.

Whitney, Eugene C.; and Gorden, Dale I., to Westinghouse Electric Corp. Brushless exciter fault indicator system. 4,164,705, Cl. 324-158.0MG.

Whitney, Robert W.: *See—*
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Wiebe, Gerald L. Three-piece solderless plug-in electrically conducting component. 4,164,725, Cl. 337-198.000.

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Wiggins, Brian H.; and Williams, Harold D., to Exxon Research & Engineering Co. Method and apparatus for investigating the mobility of a substance. 4,164,136, Cl. 73-17.00R.

Wilhelm, William D., to Interior Brick Corporation. Veneer wall covering and method of assembly. 4,164,598, Cl. 428-48.000.

Willadsen, Per: *See—*
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Williams, Harold D.: *See—*
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Williamson, William A., to Clark Equipment Company. Method of measuring volume of air entrained in hydraulic fluids. 4,164,137, Cl. 73-19.000.

Wilson, Earl L.: *See—*
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Wilson, Harry M., Jr.: *See*—
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Wiremold Company, The: *See*—
Casasanta, Salvatore J., 4,164,618, Cl. 174-48.000.
Wisconsin Centrifugal, Inc.: *See*—
Swisher, Calvin C., Sr., 4,164,311, Cl. 228-161.000.
Witt, Frank; and Semanchik, Stephen. Liquid container novelty. 4,164,284, Cl. 206-217.000.
Witte, Hans H., to Siemens Aktiengesellschaft. Input/output coupler for multi-mode optical fibers. 4,164,364, Cl. 350-96.170.
Wolf, Robert H. Tree and stump splitter. 4,164,247, Cl. 144-34.00F.
Wolff, Robert. Device for grinding spiral drills. 4,164,100, Cl. 51-239.000.
Wollnik, Hermann, to Varian Mat GmbH. Process and arrangement for registration of ion-, electron- and light-spectra. 4,164,652, Cl. 250-281.000.
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Gundlach, Robert W.; and Perry, David H., deceased, 4,164,372, Cl. 355-3.0DD.
Yabuki, Kazuyuki; and Iwasaki, Mitsuo, to Toyobo Petcord, Co., Ltd. High strength polyester fibrous products. 4,164,114, Cl. 57-236.000.
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, to Research Institute for Iron, Steel and Other Metals of the Tohoku University, The. Method for producing metal nitride sintered moldings. 4,164,528, Cl. 264-62.000.
Yakovlev, Lev N.: *See*—
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Yarp, Russel E., to Dataproducts Corporation. Multiple path paper feed system for a printer. 4,164,376, Cl. 400-642.000.
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Young, Alan C.: *See*—
Lucas, James G.; and Young, Alan C., 4,164,743, Cl. 343-854.000.
Young, Jack H.; and Halleck, Frank E., to American Sterilizer Company. Load conditioning control method for steam sterilization. 4,164,538, Cl. 422-26.000.
Young, John; Clavell, Jack; and Gaskill, George, to Gould Inc. Load management apparatus for residential load centers. 4,164,719, Cl. 335-14.000.
Young, Thomas A.; and Gustin, Jay W., to Tenna Power Corporation. Multiphase to single phase and frequency converter system. 4,164,785, Cl. 363-50.000.
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Yung, Kai-Lim W.; Silverman, Bernard; and Menikheim, Virginia C., to Monsanto Company. Thermal bonding of polyester polyblends. 4,164,600, Cl. 428-198.000.
Zahid, Abduz. Method of forming a pressure accumulator. 4,164,639, Cl. 219-117.100.
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Umezawa, Hamao; and Takeuchi, Tomio, 4,164,567, Cl. 424-123.000.
Zankl, Frank, to Kearney & Trecker Corporation. Automatic tool changer for machine tools. 4,164,290, Cl. 414-739.000.
Zappala, Giuseppe, to Indesit Industria Elettrodomestici Italiana S.p.A. Saw-tooth wave generator. 4,164,689, Cl. 315-408.000.
Zeijdel, August-Eden; and Teunissen, Rudolf B., to N.V. Verenigde Instrumentenfabrieken Enraf-Nonius. Apparatus for supporting the body of a person in an upright position, in particular for therapeutic walking exercises. 4,164,350, Cl. 272-70.000.
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Collins, Johnny, 4,164,712, Cl. 328-48.000.
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Byers, Warren J.: *See*—
Kleine, Richard A.; Byers, Warren J.; and Wright, Charles A., Re. 30,072, Cl. 182-8.000.

Hilding, Jonas O. A.; and Persson, Jan E., to Atlas Copco Aktiebolag. Drill string element handling apparatus. Re. 30,071, Cl. 175-52.000.

Kleine, Richard A.; Byers, Warren J.; and Wright, Charles A., to Unarco Industries, Inc. Safety clamp. Re. 30,072, Cl. 182-8.000.

Otis Engineering Corporation: *See*—
Sizer, Phillip S.; and Young, Carter R., Re. 30,070, Cl. 166-72.000.

Persson, Jan E.: *See*—
Hilding, Jonas O. A.; and Persson, Jan E., Re. 30,071, Cl. 175-52.000.

Sizer, Phillip S.; and Young, Carter R., to Otis Engineering Corporation. Apparatus for treating wells. Re. 30,070, Cl. 166-72.000.

Unarco Industries, Inc.: *See*—
Kleine, Richard A.; Byers, Warren J.; and Wright, Charles A., Re. 30,072, Cl. 182-8.000.

U.S. Philips Corporation: *See*—
van Hattum, Johannes S. A., Re. 30,074, Cl. 315-408.000.

van Hattum, Johannes S. A., to U.S. Philips Corporation. Circuit arrangement for producing a sawtooth current through a line deflection coil in an image display apparatus. Re. 30,074, Cl. 315-408.000.

Worsham, Lynn M. Controllable stunt kite having a pair of symmetrical bridles. Re. 30,073, Cl. 244-153.00R.

Wright, Charles A.: *See*—
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Ryan, John J. Impatiens plant. 4,448, 8-14-79, Cl. 68.000.

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Adkinson, Joseph E. Cabinet. 252,603, 8-14-79, Cl. D6-154.000.

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Aladdin Industries, Incorporated: *See*—
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Barr, Josef J. Ring jacket. 252,618, 8-14-79, Cl. D11-86.000.

Belgin, Stephen G.; and Hart, Gary E., to Memorex Corporation. Reel for magnetic recording tape. 252,627, 8-14-79, Cl. D14-11.000.

Bernhardt, Floyd V. Golf putter head. 252,649, 8-14-79, Cl. D21-217.000.

Bick, Michael A., to Shelly & Anderson Furniture Mfg., Co., Inc. Sofa. 252,601, 8-14-79, Cl. D6-63.000.

Breger, Carl-Arne, to Sandvik Aktiebolag. Cover for a pliers handle. 252,611, 8-14-79, Cl. D8-107.000.

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Cartabiano, Michael C., to Child Guidance Playthings, Inc. Toy ramp. 252,650, 8-14-79, Cl. D21-91.000.

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Cirrone, Umberto J. Novelty chair. 252,602, 8-14-79, Cl. D6-68.000.

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Control Data Corporation: *See*—
Richgels, Eugene, 252,635, Cl. D19-60.000.

Cook, David M., to Atari, Inc. Game cabinet. 252,636, 8-14-79, Cl. D21-13.000.

Corini, Louis J., to Fogel Commercial Refrigerator Company. Portable temperature controlled container. 252,605, 8-14-79, Cl. D7-77.000.

D'Alessio, Joseph R., to Champion International Corporation. Carton blank. 252,613, 8-14-79, Cl. D9-245.000.

D'Antonio, Renato A., to International Data Sciences, Inc. Current interface breakout panel. 252,626, 8-14-79, Cl. D13-12.000.

Davidson, Elizabeth G. Facial tray. 252,642, 8-14-79, Cl. D28-9.000.

Decker, Phyllis: *See*—
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Dehmer, Henry C. Bowling game board. 252,647, 8-14-79, Cl. D21-27.000.

Deschamps, Robert L.: *See*—
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Dibling, Denis V. Dispenser for dried foods or the like. 252,655, 8-14-79, Cl. D15-92.000.

Dieckhoff, Rolf. Audio-visual projector. 252,631, 8-14-79, Cl. D16-14.000.

Drayson, Thomas. Spectacle holder. 252,632, 8-14-79, Cl. D16-82.000.

Dreyer, Floye K. Stand mount for a guitar, or the like. 252,633, 8-14-79, Cl. D17-20.000.

Evans, James D., Jr. Closed circuit video display system or similar article. 252,629, 8-14-79, Cl. D14-79.000.

Fanella, Robert J.; Thompson, Elmer D.; and Wacha, Martin E., to Parker Pen Company, The. Barrel tip assembly for a ball point pen. 252,634, 8-14-79, Cl. D19-54.000.

Fogel Commercial Refrigerator Company: *See*—
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Fritsch, Udo. Fluorescent fixture. 252,654, 8-14-79, Cl. D48-23.00A.

Gale, John A. Combined slide and tunnel toy. 252,645, 8-14-79, Cl. D21-244.000.

Gibson, John, to Central States Diversified, Inc. Automobile tire display stand. 252,600, 8-14-79, Cl. D6-23.000.

Hanashima, Taira: *See*—
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Harris, James E., to Aladdin Industries, Incorporated. Beverage server. 252,604, 8-14-79, Cl. D7-65.000.

Hart, Gary E.: *See*—
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Holzwarth, Henry A.; and Wark, John D., to Johnson & Johnson. Plaque removal brush. 252,597, 8-14-79, Cl. D4-25.000.

Hosokawa, Takeshi; Oda, Hiroshi; and Yoshida, Noboru, to Matsushita Electric Industrial Co., Ltd. Lightning arrester. 252,616, 8-14-79, Cl. D10-105.000.

Howes, Peter, to Lucas Industries Limited. Fuel injection nozzle. 252,630, 8-14-79, Cl. D15-5.000.

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Holzwarth, Henry A.; and Wark, John D., 252,597, Cl. D4-25.000.
Kreusser, Meillyn. Bird feeder. 252,643, 8-14-79, Cl. D30-15.000.
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LaZar, Ralph M., to Broan Manufacturing Co., Inc. Heat recirculator. 252,641, 8-14-79, Cl. D23-151.000.
Lopez, Gilbert T. Combined protractor. triangle, compass and beam compass. 252,615, 8-14-79, Cl. D10-62.000.
Lucas Industries Limited: *See—*
Howes, Peter, 252,630, Cl. D15-5.000.
Mackie, Thomas B., to Thomas Salter Limited. Toy gyroscope, or similar article. 252,637, 8-14-79, Cl. D21-96.000.
Malm, Nils O. S.; and Larsson, Carl G. Bat in which a game player's hand is inserted. 252,648, 8-14-79, Cl. D21-212.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
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McCloskey, Edward W. Irrigation signal. 252,617, 8-14-79, Cl. D10-114.000.
Memorex Corporation: *See—*
Belgin, Stephen G.; and Hart, Gary E., 252,627, Cl. D14-11.000.
Miavitz, Frederick J. Hanger or the like. 252,610, 8-14-79, Cl. D8-373.000.
Mull, John D., to Starplex Inc. Container for blood samples or the like. 252,612, 8-14-79, Cl. D9-216.000.
Nagata, Kazuo: *See—*
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Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, to Combi Co., Ltd. Toy vehicle with removable handle. 252,652, 8-14-79, Cl. D21-74.000.
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Natwick, Vernon R., to Ramtek Corporation. Gun amusement cabinet. 252,646, 8-14-79, Cl. D21-5.000.
Nederman, Bill. Air filter. 252,640, 8-14-79, Cl. D23-149.000.
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Seibel, Ben, to Oxford Hall Silversmiths, Ltd. Spoon or similar article of flatware. 252,607, 8-14-79, Cl. D7-137.000.
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Thompson, Elmer D.: *See—*
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Thornberry, Jeffrey R. Portable timer. 252,614, 8-14-79, Cl. D10-40.000.
Vetter, Craig W., to Vetter Fairing Company. Motor-cycle fairing. 252,624, 8-14-79, Cl. D12-182.000.
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Wellwood, James; and Deschamps, Robert L., to Shure Brothers Incorporated. Phonograph stylus. 252,628, 8-14-79, Cl. D14-29.000.
White, H. Warren. Rowing oar articulator. 252,625, 8-14-79, Cl. D12-215.000.
Wiley, Nathaniel C., Jr., to Rudkin-Wiley Corporation. Wind deflector. 252,619, 8-14-79, Cl. D12-181.000.
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